LEGISLATIVE LIBRARY
BIBLIOTHÈQUE DE L'ASSEMBLÉE
LÉGISLATIVE

MAY 04 1989

FREDERICTON, N.B.

THE NEW BRUNSWICK FISHERY:
MEETING THE CHALLENGE

Donald J. Savoie
Maurice Beaudin

December 1988

89-06237/

THE NEW BRUNSWICK FISHERY:
MEETING THE CHALLENGE

List of Statistical Tables i

INTRODUCTION 1
    Outline of the Study 4

CHAPTER TWO: SHARING THE RESOURCE - THE ROLE OF GOVERNMENT 6
    Fisheries and Oceans 7
        The Clients, the Programs and the Structure 7
        Licensing 12
        The New Brunswick Department of Fisheries 15

CHAPTER THREE: DEVELOPING THE FISHERY - THE ROLE OF GOVERNMENT 19
    Expanding the Fishery - The 200 Mile Initiative 19
    The Kirby Task Force 21
    Developing the Fishery 25
    Trade and Fish 28
    The Meech Lake Accord 32

CHAPTER FOUR: IMPORTANCE OF THE FISHING INDUSTRY FOR THE PROVINCE ... 35
    Global Economic Contribution 35
    Regional Contribution 37
    Socio-economic Characteristics of Fishing Regions 41

CHAPTER FIVE: PRIMARY DEVELOPMENT 50
    Provincial Distribution of Resources 51
        Groundfish 52
        Shellfish 55
        Pelagics 59

CHAPTER SIX: PROCESSING THE RESOURCE 62
    The Global Context of the Industry 62
    Competitiveness and Profitability of the Processing Sector 68
        Interprovincial comparisons 72
        Inter-sectoral comparisons 80

CHAPTER SEVEN: MARKETING: EVOLUTION AND OUTLOOK 85
    Fish Processing: A Largely Export-oriented Industry 85
    Structure of Exports in 1987 92
    Markets 93
    Commercial Outlook 98
        Groundfish 98
        Pelagics 104
        Shellfish 109
            Lobster 109
            Crab 112
            Other shellfish 115
    Canadian Market for Fish Products 117
    Summary 120

CHAPTER EIGHT: THE CONSULTATIONS 123
General Comments → ~~The Consultations~~ 123
The Southwest 124
The Southeast 130
The Northeast 135

CHAPTER NINE: THE RECOMMENDATIONS 145
Arranging the Recommendations 145
Cooperation Between Participants in the Industry 146
Provincial Strategies 148
Development Opportunities 149
Aquaculture 153
Harvesting and Processing Capacities 154
Productivity and Innovation 156
Markets 160
Other Recommendations 161

ANNEX 166

MAPS - - - - - - - - - - - - - 178

LIST OF STATISTICAL TABLES

Table 3.1 Comparative Review of the Fishing Industry by Province 31

Table 4.1 Importance of the Fishing Industry in Each of the Sub-regions, New Brunswick, 1987 39

Table 4.2 Employment in the Fish Processing Sector in New Brunswick, 1987 40

Table 4.3 Value of Species Landed and of Products Processed, 1985 43

Table 4.4 Economic Need Index and Related Indicators (Development Commissions, 1980-82 Average) 46

Table 5.1 Quantity and Value at Landing by Province, 1987 52

Table 5.2 Volume of Groundfish Landed by Province 53

Table 5.3 Land Volume of Shellfish by Province 56

Table 6.1 Evolution of Landings and Production in New Brunswick 66

Table 6.2 Distribution of Products by Groups of Species, 1975-85 67

Table 6.3 Fish Processing - Certain Characteristics for New Brunswick and the Atlantic, 1985 73

Table 6.4 Value of Products Relative to Value of Landed Species 74

Table 6.5 Gross Margin in Relation to Sales and Productivity 76

Table 6.6 Some Characteristics of the Fish Processing Sector Versus the Manufacturing Industry as a Whole 82

Table 6.7 Some Characteristics by Manufacturing Sector (New Brunswick, 1985 83

Table 7.1 Production and Export of Fishery Products, New Brunswick, 1980-87 86

Table 7.2 Evolution of Fishery Product Exports, New Brunswick (Comparisons 1980-87) 88

Table 7.3 Exports by Species, New Brunswick, 1987 90

Table 7.4 Fishery Products Exported by New Brunswick, 1987 94

Table 7.5 Main Markets for New Brunswick Fishery Products, 1980 and 1987 95

Table 7.6 Snow Crab Production in New Brunswick, 1980 and 1986 113

ANNEX

Table 1 Landed Quantities by Species, New Brunswick, 1970-87

Table 2 Landed Value by Species

Table 3 Landed Quantities and Value, by Species and by Regions, New Brunswick, 1987

Table 4 New Brunswick Catches (Volume) as a Percentage of Total Landings in Atlantic, by Species, 1970-87

Table 5 New Brunswick Catches (Value) as a Percentage of Total Landings in Atlantic, by Species, 1979-87

Table 6 Landed Quantities by Species, Atlantic, 1970-87

Table 7 Groundfish TAC's in the 200 Miles Limit Zone, 1979 to 1987

Map 1 New Brunswick Sea and Inland Fisheries Districts

Map 2 Canadian 200 Mile Fishing Zone With the North Atlantic Fisheries Organization (NAFO) Subdivisions

INTRODUCTION

This study reports on the New Brunswick fishery. We were asked to recommend strategies "to foster an orderly development in the fishing and fish processing industry and to promote economic development."

Before we looked at possible measures to promote development in the fishery and economic development, we decided to do two things: to take stock of current circumstances in the fisheries sector and to consult with individuals having an intimate knowledge of the fishing industry.

We soon realized the importance of the fishing industry to the New Brunswick economy. The fisheries sector ranks fourth in output among New Brunswick's primary industries. At its peak, employment in the processing sector is over 12,000 and there are over 6,000 fishermen. The sector also has a strong export component.

The major species processed in the province are herring, lobster and crab. The country's only tuna processing plant is located in New Brunswick as are Canada's only two sardine plants. Unlike Nova Scotia and Newfoundland, however, the groundfishery does not yet play a substantial role in the New Brunswick fishing industry.

It is important to note at the outset that the New Brunswick fish processing industry is highly dependent on outside resources. New Brunswick processors import an important part of their resource needs from neighbouring provinces. This is especially true of lobster and herring. In the case of tuna, all of the resources are imported from outside the province.

It is also important to note that the industry is highly seasonal. Large processing plants in the northeast can stay open up to eight months in the year. In the southeast, sardine and tuna processing plants can stay open up to eleven months of the year. However, smaller plants of which there are a great number, particularly in the southeast and northeast, operate only a few months a year.

The importance of the fishing sector to the New Brunswick economy can be stated in many ways. What makes the sector particularly important is its regional aspect. The fishery is concentrated in three regions: the southwest, southeast, and northeast. When viewed from the perspective of these three regions, it is hardly possible to overstate the importance of the fishery. In the Acadian peninsula, for example, the fishery is the core of the local economy. The fishing employs some 6,000 people or 30 percent of all jobs. The seasonal aspect of the fishing industry, combined with other seasonal industries in the region such as peat moss, means that the area unemployment rate can vary from 25 to well over 50 percent, depending on the season.

The fishing industry is vitally important to all the regions where it is located, but this is not to suggest that it is at the same level of development in all regions or even that the fishery in one region is similar to that in another region. In fact, there are three distinct fishery in the province, each with their own sets of challenges. The northeast fishery is experiencing severe economic difficulties and far reaching economic adjustments are required. The crab fishery, for instance, is in a crisis situation. In the southeast, the fishing industry is relatively stable. It will be important, however, in the years ahead to secure the resources (particularly lobster). Much of the lobsters processed in plants in the southeast are imported from neighbouring provinces and the northeast. There are opportunities for development in the fishing industry in both the northeast and southeast and these will have to be fully exploited.

In contrast, the southwest is, for the moment at least, in a solid position. But the industry has experienced boom and bust cycles before, and industry representatives from the area are quick to caution that this period of relative prosperity may well be temporary. That said, the southwest region is ideally positioned to take full advantage of the growth potential in aquaculture. Aquaculture represents one of the few areas of the food industry where there appears to be significant potential for new growth in the 1980s. In short, the southwest can build from the remarkable successes it has had in recent years in aquaculture.

As noted earlier, we consulted a number of industry representatives to seek their guidance in preparing this report. We were asked in the terms of reference for this study to consult with industry representatives and government officials in preparing the report. We did so and, in the end, the consultations proved extremely useful in several ways. First, industry representatives, including federal and provincial fisheries officials, identified a number of issues for us to explore. Second, they identified numerous pitfalls to avoid. Third, their views proved particularly helpful in preparing our recommendations. In fact, *all* recommendations contained in the concluding chapter of this report were suggested to us by one or more of the people we consulted.

Outline of the Study

This study has several chapters. In the next chapter we review the role of governments in managing the fishery. The purpose of the study is to describe in some detail how the various consultative committees and government decision-making processes work. Specifically, we wanted to explain how the federal government make decisions on the allocation of fishing quotas.

Chapter three looks at the roles governments play in developing the fishery in New Brunswick. We review government efforts through the fisheries subsidiary agreement and other development programs. We look at the proposed Canada/U.S. free trade agreement and the proposed Meech Lake Constitutional Accord Act and their implications for New Brunswick.

The fishing sector's importance at the regional level is discussed in chapter four. The main characteristics are established for each fishing region: structure of landings, type of products processed, size of companies, secondary activities, etc. Economic dependency is also examined in light of several socio-economic indicators and their interrelation with the fishing sector.

In chapter five, the present situation and future outlook of the primary sector is described. The evolution of the resource is outlined, as well as the fishing efforts made with regard to the main species. Supply forecasts are made for raw materials in relation to existing DFO's inventory management plans, as well as to present and future efforts in primary development.

Chapter six is entirely dedicated to processing. The wide variety of New Brunswick's processing industry is mentioned, together with its rapid growth following the declaration of the 200 mile economic zone. Emphasis is also placed on the industry's competitiveness both at the provincial (intersectorial) and interprovincial level (Atlantic region). The performance of the processing sector is examined with respect to its own constraints. Some results from the Kirby report are discussed in light of New Brunswick companies' own set of circumstances.

Chapter seven deals exclusively with the marketing of fishery products. The evolution of exports is described as regards the cyclic fluctuations and changes in demand, the availability of resources, and the international economic climate. Each market of significance is analysed, as well as the main groups of export products. The commercial potential is also examined in light of all these factors, and for each species. A short section is devoted to the Canadian market for sea products.

Chapter eight reports on the consultations. It breaks down the consultations on a region by region basis.

The last chapter outlines the recommendations of the report. The recommendations are comprehensive and cover numerous issues from aquaculture to research and developmet to marketing of herring products.

CHAPTER TWO

SHARING THE RESOURCE: THE ROLE OF GOVERNMENT

It is hardly possible to overstate the importance of the fisheries sector to the economy of Atlantic Canada. Its central role is apparent to anyone with even only a passing knowledge of the economy of northeast New Brunswick, particularly the Acadian peninsula, and — albeit to a lesser extent — of the southeast and southwest regions. As a 1982 federal task force reported: "more than one-quarter of the total population of the Atlantic provinces lives in small fishing communities... At least half of these communities have essentially single-sector economies, with fishing and processing plant employment occupying 30 percent or more of the balance force."[1]

Thus it is also hardly possible to overstate the important role government must play in regulating fisheries. Only a moment's reflection is required for one to appreciate that unrestricted fishing would inevitably unleash a mad rush to grab whatever one could and as quickly as possible.

Chaos would soon follow. We now know from experience that massive expansion in the numbers of fishermen, vessels and processing facilities has usually brought major adjustment problems within a few years. For example, following the extension of fisheries jurisdiction in 1977 from 12 miles to 200 miles, it was widely believed that the fishery should expand to take full advantage of emerging economic opportunities. The numbers of licensed fishermen (not all necessarily active) jumped from 36,500 to 53,500 between 1974 and 1981 — an increase of 45 percent.[2] By the early 1980s, as is well known, the sector was confronting far-reaching problems and difficulties.

The result is that both levels of government have intervened in the sector in many varied, subtle (and not so subtle) ways over the past twenty years.

Since fisheries is a jurisdictional sandwich, close federal-provincial cooperation must be maintained if opportunities are to be pursued successfully, and, indeed, the necessary mechanisms and structures are now firmly in place and cover the full gambit of government activity. In this chapter we look at government programs and intergovernmental cooperation in regulating fisheries. The next chapter will focus on development programs, the Kirby task force report, and the impact on the sector of the proposed Meech Lake constitutional agreement and the proposed free trade agreement with the United States.

Fisheries and Oceans

The Clients, the Programs and the Structure

The federal Department of Fisheries and Oceans (DFO) has identified four major client groups.[3] The first group includes all fishermen, fish plant owners and workers, related supply industries and marketing, as well as all consumers of fish products. The second group includes all mariners, the third the offshore petroleum industry and the fourth, the ocean technology industry.

The department has a strong presence in Atlantic Canada. For instance, its operations for the region encompassing the Gulf of the St. Lawrence is located in Moncton, New Brunswick and it has a Halifax-based office with jurisdiction over the Bay of Fundy region. In addition, a separate organizational structure exclusively concerned with the Atlantic fishery has been established in the department's head office in Ottawa.[4]

The department carries out two important activities in the Atlantic region: fisheries and habitat management and resources and industry development. The functions of the first involve the surveillance of fishing areas, the monitoring of catches and stock status — that is, the development of habitat management plans and the surveillance and enforcement related to fish habitat. In addition, the department has a licensing policy and regulations framework to guide the licensing and registration of fishermen, vessels and fishing companies. In short, fisheries and habitat are concerned with regulation and management. Particularly since 1977 when, as mentioned above, Canada extended its jurisdiction to 200 miles, the Department of Fisheries and Oceans has regulated access to all groundfish stocks, not only by season, but also by vessel size and gear types.

Some of the discussions relating to fisheries in recent years have centred on the groundfish allocations which are decided each year under the authority of the Minister of Fisheries and Oceans and set out in a document entitled the *Atlantic Groundfish Management Plan*. The debate has centred on inshore-offshore conflict and on the quotas allocated to different regions. The issue was raised time and again in our consultations and it is important to describe briefly how decisions are ultimately made and how the decision-making process works. There are a number of basic guiding principles, including the following:

1. The conservation and restoration of the fisheries resources.
2. Access to all groundfish stocks will be regulated by season, quotas, vessel size and gear types.
3. The allocation of fishery resources will be on the basis of equity, taking into account

adjacency to the resource, the relative dependence of coastal communities and the various fleet sectors upon a given resource, and economic efficiency and fleet mobility.

4. Small vessels will be limited to area of operation, as specified in the Sector Management Plan.

5. Coordination of the development of fishing fleets over the fishing grounds and the length of the operating season.

6. Utilization of the fishery resources over the calendar year to the degree possible.

7. All gear will be subject to quota management, except as noted.

8. TAC's (Total Allowable Catch) will only be adjusted during the season as a consequence of major changes in the scientific advice (of at least a 10 percent change in TAC) and following consultations with those involved in the fishery.

9. Adjustments in the inshore/offshore ratio for particular stocks may be considered by the Minister when: a) the TAC changes by 15 percent or more in any year or cumulatively by more than 15 percent over a series of years during the 1984-88 period, or b) as a result of international events or negotiations, the Canadian share of the TAC changes by 15 percent or more from the level previously in force.

10. There will be an allocation made for a Resource Short Plant Program (RSPP) in specified stock areas which will be taken from the Canadian quota before historical inshore/offshore sharing arrangements are made.

Guided by these principles, the process begins in May of each year when scientists review domestic stocks.[6] The exercise is led by a special committee — the Canadian Atlantic Fisheries Scientific Advisory Committee (CAFSAC). The scientists review anywhere between 24 and 30 groundfish stocks to advise government on their availability. This advice is submitted to the assistant deputy minister (Atlantic Fisheries) through regional directors general. In June-July, the assistant deputy minister chairs the Atlantic Groundfish Advisory Committee (AGAC) which reviews the scientific findings. Representatives of provincial governments, the fish processing sector, and fishermen are invited to participate on the committee. In turn, the findings and advice from the scientists are passed on to a similarly structured committee at the regional levels, usually chaired by the regional directors general. As many issues as possible are resolved at this level. Those still unresolved are submitted to the Atlantic Groundfish Advisory Committee and any remaining ones further submitted to a meeting of the Federal-Provincial Atlantic Fisheries Committee of Deputy Ministers (FPAFC). This committee meets in the fall and reviews a list of "substantive issues" that were not decided upon in AGAC. The minister then calls a meeting of the Atlantic Council of Fisheries Ministers (late November - early December) to decide upon the remaining unresolved substantive issues. Typically, the issues that surface at this level include whether or not vessels under 65 feet can have access to cod in certain sub-areas and divisions, the split between gulf-based vessels and non-gulf based vessels to fish for redfish, the question of scientific advice which calls for a reduced total allowable catch, and so on.[7] Most, if not all, unresolved issues are expected to be dealt with at this level. Those that are not must be decided by the minister of Fisheries and Oceans where "the buck" ultimately must stop. Finally, the minister makes available, usually by 1 January every year, the "Atlantic Groundfish Management Plan."[8] This provides a detailed allocation of quota for cod, haddock, pollock, redfish, flounder, greenland halibut, grenadier, silver hake, white hake, argentine, halibut and squid.

The majority — although not all — of the people we consulted approved of the process in place: it provides for all participants to voice their views. This is not to suggest, however, that everyone agrees with the decisions. Many expressed major disappointments with the current offshore/inshore split, believing that inshore fishing is being tied up because it is subject to seasonal and by-catch restrictions and trip limits. In addition, many argue that gulf-based plants should have access to groundfish outside the gulf.[9] As noted above, the consultative process itself also came under some criticism. A representative of the *Association des pêcheurs professionnels acadiens Inc.* (APPA) suggested that it had gotten out of hand. There are a growing number of consultative committees — for example, DFO has over 50 in the gulf region alone. More importantly, the APPA representative believed that the consultative committees serve only a limited purpose — that many are in place simply to legitimize unpopular decisions.[10]

It is also important to point out that in 1982 a new offshore enterprise allocation program (EA) was introduced on an experimental basis. The objectives of the EA program were to eliminate the race to the fish, provide for greater operational flexibility, promote greater market responsiveness, reduce the need for government regulations and facilitate long-term planning. It involved four major offshore companies. In 1983 the Atlantic Fishery was restructured, during which the industry continued to operate under the EAs. In 1984 the program was formally introduced for a 5-year trial period. During that time, the program was refined to include sharing formulas for quota declines, access fees and the IOG was placed on percentage sharing. In 1987, an 18-month comprehensive review and analysis of the offshore program was initiated. The review found that the offshore industry has benefited greatly from "the stability" introduced by the EAs. Government officials report that the offshore fishermen are enthusiastic about the approach and have urged not only that it be continued, but strengthened. Again, however, the inshore industry feels that it has been short-changed by this development.

The process in place to establish quotas for the groundfish is also employed to establish quotas for the Atlantic shellfish and pelagics. There are variations for each fishery, with the process for groundfish perhaps being more structured and more formal. Still, in all instances quotas are determined on the basis of the findings presented by the scientists through the CAFSAC.

There are also, as we have seen, guiding principles for establishing quotas. One principle which is subtly stated but which is not subtly applied is stability. As one industry spokesperson explained "quotas are cast in history. They do not change from year to year in terms of who gets them." Fisheries and Oceans officials readily confirm this, insisting that the industry could not absorb important changes in quotas and remain viable. The result is that last year's quota comprises the largest determining factor of the quotas in any given year. In other words, this year's winners were last year's winners and this year's losers were last year's losers.

Licensing

Few would disagree that the Atlantic fishery was over-exploited during the 1960s and early 1970s. As a result, the federal government began to introduce a series of "progressively restrictive measures" to limit the exploitation.[11] One such measure was a more discriminatory licensing policy. It is now tied to several objectives, the most notable being "to provide for an orderly harvesting of the fishery resource and to promote satisfactory incomes to the average participant..."[12] It should be noted, however, that licence limitation has existed since the late 1960s on the Atlantic coast. In addition, the universal registration of fishermen and vessels was introduced in 1973. It has also been federal government policy for a number of years that before subsidies are given, a check is made on the extent of involvement in the fishery of the person applying for subsidies.

The department launched a major review of its licensing policy for the Atlantic coast (the Levelton study) in the late 1970s. Its report was released in 1979, and, in calling for sweeping changes to the government's licensing policy, presented fourteen major recommendations. A year later the federal government began to implement the Levelton recommendations, among which were the categorization of fishermen, the licensing of freezer trawlers, and the elimination of resolved groundfish licences held in respect of vessels greater than 100' LOA.

The Kirby Task Force report also stressed the importance of an effective licensing policy. It urged the Department to strengthen the process of identifying fishermen as full- or part-time and to adopt a basic principle that the licence, not the boat, would pertain to the individual as a quasi-property right and that the licence specify either a limitation on the catch (called an enterprise allocation or a quota licence) or on the fishermen's vessel and gear (effort related) and that the licence be divisible and transferable or that it could be sold or traded subject to certain conditions.[13] These recommendations have been adopted as policy.

There are a variety of reasons why the Department of Fisheries and Oceans wishes to categorize fishermen as full-time or part-time. For one thing, it is considered vital to the development of a professional status for fishermen. For another, fishermen designated as full-time are given priority for additional licences and subsidies over part-timers and newcomers. In addition, if a fishery gets into difficulty and the only solution at hand is to reduce the number of fishermen, then it follows that the people most affected will be those who are fully dependent on it for their livelihood.

Every vessel used in a commercial fishery must be registered annually with the Department of Fisheries and Oceans. There are a host of policy guidelines on commercial vessel registration and ownership issues. These have been well documented elsewhere and there is no need to go over them here. Suffice it to note that only Canadian registered vessels may be registered with the DFO.

The policy of Fisheries and Oceans is to limit new entrants in the industry, again in the interests of stability and to ensure that the industry remains viable. The result of this policy is that the number of licences available to fish lobster has been frozen since the late 1960s, for groundfish and crab since the mid 1970s, and so on. To grant new licences at this stage, officials insist, would only serve to increase capacity in a sector which is already seriously over-crowded. One may well ask, however, why, given that the restrictive licensing policy and the elaborate process to determine quotas have been in place for some time, this overcapacity still exists?

There are various reasons. The first is that fishermen today are far better equipped than they were ten or twenty years ago. The boats are faster and some have the most modern of equipment to detect and catch the fish. Although there are restrictions on boat lengths (i.e., a fisherman can only replace a 60 foot boat with another the same size), there are no restrictions on equipment or even replacement hull size. The result is that we may well have a stable number of fishermen but they are now far more efficient. The DFO recently revised its policy to require fishermen to submit their plans to the department before they may proceed with the purchase of replacement boats. The thinking here is to get a handle on the capacity of the vessels. We were told in our consultations, however, that the department is experiencing considerable difficulty in implementing this policy. Overcapacity also exists in fish processing, with the number of processing plants far in excess of what the resources can bear. In the matters of both boat replacements and processing plants, the provinces play an important role.

The New Brunswick Department of Fisheries

The New Brunswick government is increasingly playing a larger role in the fishery. Its Department of Fisheries is, for example, more and more consulted by the federal government on the issuing of quotas, licences and the making of policy. In addition, the province is now pursuing with more vigour opportunities in aquaculture development. The government also made fishery an important part of its *Agenda for Change*.

An important program of the provincial department is the financial assistance it makes available to fishermen for new vessel construction, major

refits or the overhaul of existing vessels, new on board equipment and even for the purchase of used fishing vessels. There is also a weir loan program. The department received in 1987 close to 400 applications for various loans assistance.[14]

The department also grants licences to fish processors. Note that the processing sector is under the jurisdiction of the Department of Commerce and Technology, as are all manufacturing activities in the province. In our consultations, many argued that in the past the department had played "fast and loose" both with its loan assistance programs and in approving new licences to fish processors. Some suggested that politics more than economics had shaped the decisions for both. Problems with the loans program have been well publicized and well documented in the media.

It is beyond the scope of this study to review the workings of specific provincial government programs. Suffice it to note that the department has declared its intention to tighten up considerably its loan assistance program and to amend the Fish Processing Act. The intent is to tailor the number of processing licences to the quantities of fish available. One can only applaud such a move as being important to the strengthening of the fishery sector and to ensuring its long term viability. We will return to this point later in the study.

The department also has a fish inspection program, which it coordinates with federal departments, including Fisheries and Oceans, Health and Welfare, and Consumer and Corporate Affairs. It also sponsors numerous promotional initiatives and offers technical advice to fishermen and processors and the industry. As well, it provides important training facilities and operates a fisheries school in Caraquet to train young or aspiring fishermen and to upgrade the skills of existing fishermen. The department also operates a marine centre and an aquarium in Shippagan. Important research activities covering a host of issues have been launched there in recent years.

The provincial Department of Fisheries, like the federal Department of Fisheries and Oceans, has moved considerably beyond regulatory and research activities. Both departments have intervened directly in the industry to promote economic development. The next chapter reviews these efforts.

NOTES TO CHAPTER TWO

1. See, *Navigating Troubled Waters: Task Force on Atlantic Fisheries* (Ottawa: Minister of Supply and Services, 1982), p. 23. Quebec is included in this estimate. However, the number of active fishermen whose livelihood depends on the fishery does not exceed 28,000.

2. *Ibid.*, p. 13.

3. See, among others, Canada, *Annual Reports (various dates)*, Department of Fisheries and Oceans (Ottawa: Minister of Supply and Services, 1987).

4. *Ibid.*

5. Canada, 1988. *Atlantic Groundfish Management Plan*, Department of Fisheries and Oceans, Ottawa, undated.

6. The consultative process leading to the adoption of the *Atlantic Groundfish Management Plan* was explained to us by officials of the Department of Fisheries and Oceans, Ottawa.

7. See among many others, *Minutes of Meeting of Atlantic Council of Fisheries Ministers* held in Ottawa, 10 December, 1985. (Ottawa: Department of Fisheries and Oceans, 1987).

8. See, for example, *Atlantic Groundfish Management Plan.*

9. Consultations with various participants in the fishery. See also *Preliminary Report*, Government __ Industry Workshop __ Inshore offshore sharing of the Atlantic Groundfish Resources, meeting held in Montreal, 20-22 April, 1988.

10. See, Canada, Proceedings of the Standing Senate Committee on *Fisheries*, issue no. 46, 17 June, 1988.

11. See, *Commercial Fisheries Licensing Policy for Eastern Canada, Discussion Paper, Ottawa*, Department of Fisheries and Oceans, December 1985.

12. *Ibid.*, p. 1.

13 *Ibid.* See also *Navigating Troubled Waters*, p. __.

14. See, *New Brunswick's Annual Report 1987*, Department of Fisheries.

CHAPTER THREE

DEVELOPING THE FISHERY: THE ROLE OF GOVERNMENT

In fisheries, as in virtually every economic sector, governments have not been content to sit back and see the industry develop on its own. Rather, they have intervened in a variety of ways to promote development. The federal government extended Canada's fisheries jurisdiction to 200 miles in January 1977; in the early 1980s it established the Kirby task force to review federal fisheries policies and an important federal-provincial fisheries agreement was signed in 1984. As well, its recently-launched "Canada - U.S. free trade" initiative could have a far reaching impact on the Canadian fishing industry. This chapter reviews these initiatives and comments on their impact on the New Brunswick fishery.

Expanding the Fishery — The 200 mile initiative

It was with great fanfare and hope for economic prosperity that the federal government unveiled its intention to extend Canada's fisheries jurisdiction to 200 miles. Optimism was unlimited. The fishermen, the processors and those marketing fish products welcomed Ottawa's initiative and all made ambitious plans to catch, process, and to sell more fish. New resources would be made available and new markets would inevitably open up. Major new investments were made and some Canadian banks were only too happy to make loans available to the fishing industry. As the Kirby task force noted, "an attitude quickly developed that any financial problem in the industry could be solved by a greater volume of production."[1]

To be sure, there have been some remarkable success stories linked to the 200 mile extension. For example, Canada held fourth place in export value of seafood products in 1977. By 1979, Canada had become the world's number one exporter. Atlantic groundfish exports alone totalled $570 million in 1981.[2]

But there were also problems. For one thing, the New Brunswick based fishery gained very little, if anything, from the 200 mile extension. Very little of the new resources were made available to New Brunswick fishermen and processors, with the result that the New Brunswick fishery was soon confronting stronger competition from neighbouring provinces. New Brunswick, for example, has seen its groundfish landings decline by 50 percent between 1968 and 1987 or from 36,000 to 20,000 tonnes. By contrast Fishery Products International of Newfoundland alone now lands 180,000 tonnes of groundfish.

Still, the whole Atlantic fishery was facing serious difficulties only a few years after the 200 mile extension was implemented. The economic opportunities expected turned out to have been widly exaggerated and many firms seriously over-extended themselves in the anticipation of larger and more lucrative markets.

Soon the industry was facing a crisis situation. Some suggested misguided government fisheries policies were at fault, while others blamed the problem on the high and unpredictable interest rates of the early 1980s. In some instances, something like two-thirds of a firm's earnings were required to pay interest. When commercial banks became concerned with the imminent collapse of the fishing industry on the Atlantic coast and the consequent risk that their large loans might not be repaid, they began to pressure the federal government to intervene. The federal government responded by establishing a task force on the Atlantic Fishery.

The Kirby Task Force

The Kirby Task Force confirmed that the industry indeed was in difficulty. One of the first thing one reads in its report is the statement that "the fishery, viewed from either an economic or a social perspective, is in serious trouble. Change in the way a great many things are now done is essential and must be undertaken as quickly as possible if the fishery is to survive."[3]

The task force was appointed primarily to report on the problems of the groundfish industry. After consulting widely throughout Atlantic Canada, the task force came forward with sweeping recommendations to strengthen the "economic" viability of the Atlantic fisheries. In all, it made fifty-seven recommendations, ranging from how to allocate the Canadian quota of northern cod to recommending a series of further studies on a host of issues. Federal fisheries officials report that a good number of the Kirby recommendations were already in the implementation stage by the time the report was tabled. In any event, in the end, fifty of the fifty-seven recommendations were accepted.

Both the Kirby task force itself and many of the recommendations were controversial. Many in the private sector, particularly large and medium sized processors, approved of the Kirby report. They insist that by accepting many of the task force recommendations, the federal government "finally turned the Atlantic fishery right side up". From their perspective, the fishery would finally be viewed as an industry, as it should have been all along, and not as some kind of romantic way of life as in days past, with government always present with cash grants, subsidies and handouts. The typical business person agreed with Kirby's position that "The Atlantic fishery industry is in very serious trouble; it must be put in a position where it can once again become economically viable. To do this will require pragmatic rather than ideological decisions about a series of extremely tough problems."[4]

Not everyone, however, was pleased with the findings of the task force. The inshore fishery claims that the report sided with the offshore fishery at their expense. They suggest that the task force sought to strengthen the offshore sector in the hope that it would encourage year-round, rather than seasonal, fishing and point the way to a self sustaining and economically viable Atlantic fishery.

The New Brunswick fishing industry in particular, has been critical of the Kirby task force, although not specifically with its recommendations. In fact, many in the province supported a good number of the recommendations. For example, the provincial Department of Fisheries and many in the industry welcomed the task force recommendation that specific allocations of fish for delivery to resource-short plants be made in the off-peak season. They also agreed with the recommendations that federal regional development efforts for fish processors be re-oriented away from plant construction and toward improving the efficiency of existing plants and that federal manpower training programs should make assistance available to encourage training for skilled positions in fish plants.

New Brunswick's concerns with the Kirby task force were over the federal government's involvement with the restructuring of the offshore industry. It will be recalled that the Atlantic Fisheries Restructuring Act, which passed on 30 November, 1983, authorized the Minister of Fisheries and Oceans "to invest in and provide financial assistance for the restructuring of Atlantic fishery enterprises, in order to facilitate the development of economically viable and competitive Atlantic fisheries."[5]

As mentioned above, in the early 1980s several large firms in the fishing industry were on the edge of bankruptcy and some commercial banks were deeply concerned because they held large oustanding loans. The federal government was faced with two choices: let the companies go under or attempt to rescue and restructure the firms through large infusion of public money.

Some textbooks economics suggest that bankruptcies are normal and to be expected in a private economy. By weeding out uncompetitive firms, bankruptcy provides additional room for growth by more productive, job-creating enterprises. When a company fails, shareholders lose their investment and unsecured creditors obtain less than full compensation for their loans, with assets sold to other firms at depressed prices. But, in turn, those assets placed in the hands of efficient managers will lower the cost of production. Productivity and international competitiveness are both increased, sales grow and new employment is created. Accordingly, government intervention to save a failing firm is counter-productive.

The federal government decided to toss aside textbook economics and intervene. Without massive government intervention neither National Sea nor Fishery Products International would exist today in their present form.

With the aid of $300,000,000 in taxpayers' monies, two large firms were able to develop to the point where they now dominate the market. New Brunswick-based firms, with virtually no infusion of government funds, are left to fend as best they can. To many in New Brunswick, the competition is anything but fair. In addition to being the beneficiaries of government funding, the two large firms have also the largest share of the offshore quotas.

Some New Brunswickers go so far as to suggest that the government restructuring plan has hobbled the provincial fishery for years to come. That is, there is no longer a level playing field. The entire industry will be titled to large Nova Scotia and Newfoundland based firms which only became viable because the federal government decided to bail them out with money and large quotas. Can New Brunswick based firms possibly compete? A representative of APPA expressed the view of many in the New Brunswick fishery industry when, in discussing the possibility of reduced government assistance to the industry, he declared that: "It would be unacceptable and unfair for Fishery Products International and National Sea Products to escape with all the quotas and all the benefits after having had the benefit of hundreds of millions of public dollars."

Thus, it is not so much the Kirby task force report that concerns the New Brunswick fishing industry; rather, it is the federal government's efforts to restructure the Atlantic fisheries while overlooking the local industry, that has them deeply worried. In short, the federal government chose to ignore textbook economics in the case of the offshore industry — thus benefiting the Newfoundland and Nova Scotia based fisheries — but to apply it to the New Brunswick fishery. Massive federal grants helped to restructure the fishery in Nova Scotia and Newfoundland, while in New Brunswick federal assistance was relatively scarce.

Developing the Fishery

Both orders of government have important programs in place to develop fisheries. Not only have they put in place important programs to stimulate development, they have also established an elaborate federal-provincial consultation process to ensure that the various development programs do not work at cross purposes.

The federal government carries out a good part of its development efforts under the *Fisheries Development Act*,[7] which, administered by DFO, makes possible a wide range of activities. Under the Act, the federal government can sponsor measures to promote a more "efficient exploitation of fishery resources and the exploitation of new fishery resources and new fisheries." The Act also provides authority to support the introduction of new types of fishing vessels, equipment, techniques, and new fishery products, as well as to improve the handling, processing and distribution of fishery products.

In recent years, DFO has concentrated its efforts and resources in Atlantic Canada in the areas of quality improvement, cost reduction, resource utilization and technology transfer. DFO has supported industries in these areas throughout the Atlantic region.[8]

Quite apart from the development efforts of DFO, other federal government agencies — first DREE, then DRIE and, most recently, the Atlantic Canada Opportunities Agency (ACOA) — have also provided special incentives for the construction, expansion and modernization of fish processing plants over the years. These grants are calculated on the basis of capital cost and expected poles created. It is now established practice to consult DFO officials before deciding whether or not a grant should be awarded to any firm anywhere in Atlantic Canada.

The most important and costly development efforts, however, are sponsored under a joint federal-provincial subsidiary agreement on fisheries development. Signed on 27 August, 1984, the New Brunswick agreement calls for $45 million in spending, with the federal government contributing $25 million.[9] This agreement, however, is scheduled to expire on 31 March, 1989.

The programs under the agreement are divided into two schedules: schedule A which constitutes the federal contribution and schedule B which comprises the provincial loans and contribution. There are programs for resource development, harvesting, fishery adjustment, infrastructure, processing and product diversification, the native fishery and for research and program management. Our consultations reveal that the various programs are being very well received, although frequently considered, long overdue. Initiatives such as assistance for storage facilities, unloading and transportation, refrigeration and upgrading of fish holds are having an important and highly beneficial impact on the New Brunswick fishery.

The criticisms directed at the agreement were of the kind to be expected: "too little, too late or not enough to make a lasting and appreciable impact." In addition, some argued that the agreement's objectives are much too vague even to serve as a guide for action. The stated objectives are "to enhance the fishing industry in the Province... to coordinate the fisheries development activities of the two governments..." Such objectives, as one observer commented, "serve little purpose, other than filling in the required blanks of a federal-provincial agreement."

Nevertheless, the federal-provincial consultation process to manage this agreement appears to be working well though it needs to be strengthened. The one criticism heard is that it is bureaucratic and too slow. On the other hand, the process ensures that the two governments are cooperating, that emerging opportunities and problems in the fishing industry are communicated widely, and that the private sector knows that governments can have one voice when it comes to programs to assist them.

A joint management committee underpins the consultative process.[10] The committee consists of four members, two each from the federal and the provincial governments. The committee is responsible for the administration of both schedule A and B programs, the development of an annual work plan and annual estimates, and the review of projects sponsored by the agreement.

It should be noted that successful joint federal-provincial programming in the New Brunswick fishery predates the subsidiary agreement. One of the most successful earlier examples is the development of aquaculture. The first attempts at developing the cultured mussel industry dates back to 1977 in southeast New Brunswick and the commercial culture of the Atlantic salmon in 1978 in the southwest region. Since then the efforts have multiplied, with both the federal and provincial governments playing important roles. Aquaculture is now an important part of the New Brunswick fishery. Sales are expected to top $40,000,000 in this fiscal year and the industry now employs directly about 500 people. Much of the efforts in aquaculture have been concentrated on a few species, notably the Atlantic salmon and oyster culture. There is no doubt that strong potential exists for other species, such as halibut, scallops, clams and mussels. We will return to aquaculture later in the study.

Government-sponsored efforts to develop the aquaculture industry have played a pivotal role in its growth. Similarly, development efforts under the fisheries subsidiary agreements have been important for the province's fishing industry. The most dramatic federal initiative, however, which potentially at least could have far reaching implications for the New Brunswick fishing industry is the free trade initiative with the United States.

Trade and Fish

The federal government has embarked on a major trade initiative with the United States. The United States Congress has already ratified the agreement and the Canadian Parliament must accept or reject it by 1 January, 1989. Whatever it decides, it is clear that it will be hardly possible to return to the status quo.

As trade between European countries becomes more and more integrated, countries elsewhere are searching for more liberalized trade with their more important trading partners. And yet even highly developed countries, such as the United States, are not averse to setting up barriers to trade when their partners are suspected of unfairly subsidizing certain sectors. Canada saw, for example, the United States turn to protectionism in the fishery and wood products in recent years. This, in large part, led Canada to initiate major trade talks with the United States. In short, the Canadian trade initiative is an attempt to enhance and secure access to Canada's principal export markets. This in turn, it is hoped, will spur economic development in the fishery and, by extension, in the peripheral and traditionally slow growth regions of the country.

The merits of free, or (to be more precise) or freer, trade with the United States have been well documented elsewhere. Suffice to note that over 30 percent of national incomes result from trade and more than three million Canadian jobs depend on trade. Anything that can enhance or secure Canada's principal markets is, of course, welcomed.

The merits of freer trade with the United States for the fishery have also been well documented. Supporters of the proposed agreement argue that it will improve Canadian access to the large U.S. market for fish, create opportunities for increased Canadian processing of value-added products, and benefit Canadian fish exporters through the dispute settlement mechanism.

There is no doubt that the Canadian fishery, when viewed in its entirety, stands to benefit a great deal from a freer trade arrangement with the United States. Several key indicators point to that the United States as the prime market for Canadian fisheries products. For example, Canada's fishing industry produced almost $3 billion in a variety of products and led the world with $2.4 billion worth of exports.[12]

A closer look at the New Brunswick fishery, however, reveals important unresolved issues. The table below shows that New Brunswick trails the three other Atlantic provinces in exports to the United States as a percentage of total exports of fisheries products. A significant proportion of its fisheries products is exported to Asia. In addition, the province has some specialized products, such as smoked herring, which it exports to Caribbean countries, while having little market penetration in the United States.

Table 3.1

Comparative Review of the Fishing Industry by Province

Province	Number of Fishermen	Number of Registered Fish Processing Plants	Number of plant Workers	Value of Production 1986 $ Millions	Value of Total Exports 1986 $ Millions	Value of Exports to U.S. 1986 $ Millions	Exports U.S. as a Percentage of Total Exports
Newfoundland	26,500	228	10,620	617	556	422	76
Nova Scotia	14,000	294	9,700	765	647	472	73
Prince Edward Island	3,700	60	1,360	87	61	48	79
New Brunswick	7,500	168	6,480	389	307	194	63

Source: The Canada—U.S. Free Trade Agreement and Fisheries — An Assessment, Canada.

It is often argued, as we did earlier, that freer trade with the United States holds important advantages for increased Canadian processing of value-added products. With the elimination of tariffs, the argument goes, the Canadian fishing industry will be able to service a market ten times the size of its domestic market. It is well known that the market for ready-to-serve processed products is expanding. Existing Canadian processors of value-added products — not to mention new or would-be processors — could exploit various opportunities to export to the large United States market. It is important to ensure that both government levels can intervene as they like in the fishery sector after the free-trade agreement is accepted.
All tariffs are scheduled to be eliminated by 1 January 1998, with some to be removed immediately and the rest in five or ten equal annual steps.

That said, some of the most important New Brunswick fishery products, such as lobster and herring (round and fillets), already enjoy tariff-free access to the United States. It is true that tariffs do exist on New Brunswick crab products, but increasingly this industry is looking to the Asian market, specifically Japan. In 1987, for example, over 60 percent of the provincial export of crab products went to Japan compared with 34.5 percent to the U.S. In any event, the problem in the local industry is not so much the lack of markets as it is the lack of crabs.

The most important gains from freer trade with the United States are likely to be around fresh and frozen groundfish products. The federal government's own publication, *The Canada—U.S. Free Trade Agreement and Fisheries*, acknowledges this. Certainly the groundfish industry holds great potential for increased processing of value-added products and, by extension, for new employment.[13]

What the above suggests is that for the New Brunswick fishing industry to benefit from freer trade with the United States, it will require greater access to the groundfish resource. If it is unable to secure more groundfish quotas, it is unlikely that the province's fishing industry will benefit greatly from Ottawa's major trade initiative. And yet it is precisely to promote economic development in the fishery (among other sectors) and in peripheral regions that the government initiated discussion on the free trade agreement.

The federal government also recently launched another major initiative that could have an important impact on the Atlantic fishery — the constitutional initiative, commonly known as the Meech Lake Accord — which specifically identifies the fishery as an issue for further discussions at the First Ministers' level.

The Meech Lake Accord

It is well known that Premier Peckford of Newfoundland insisted during the marathon meeting which led to the Meech Lake Accord that the fishery be placed on the agenda of future annual conferences of First Ministers. It is also well known that the Government of Newfoundland has for some time been trying to gain more, if not full, jurisdictional authority over its fishery. The Meech Lake Accord, which puts the fishery on the agenda of the future constitutional conferences, will enable only seven provinces to modify the Constitution in this sector.

If there was one unanimous message that came through in our consultations, it was that the current split of jurisdictional responsibilities in fisheries is fully adequate and that it should be left unchanged. New Brunswickers are profoundly convinced that their window on the Atlantic ocean and on the fishery off the Atlantic coast is as legitimate as that of any other province. They are also convinced that the fish off this coast belong to everyone who looks to the sea for a living. They hold that only the federal government should have the last word on decisions affecting the sharing and management of the resource in the 200 - mile Canadian economic zone. To attempt to do otherwise or to fragment the decision-making could lead to acrimonious debates between provincial governments and instill insecurity everywhere in the industry. The extent to which this view is held in New Brunswick is such that we did not meet one person who suggested that the current jurisdictional division of activity in the fishery is inadequate or even that it could be improved.

NOTES TO CHAPTER THREE

1. Quoted in Canada, Task Force on Atlantic Fisheries *Navigating Troubled Waters Report*, (Ottawa: Minister of Supply and Services, 1982), p. 13.

2. *Ibid.*, p. 49.

3. *Ibid.*, preface.

4. *Ibid.*, p. 64.

5. See, Canada, Atlantic Fisheries Restructuring Act, *Annual Report 1985-1986*, (Ottawa: Fisheries and Oceans 1986), p. 1.

6. Quoted in Canada, Proceedings of the Standing Service Committee on Fisheries, Issue no. 46, June 17, 1988, p. 46:19.

7. See, Canada, *Fisheries Development Act — Annual Report 1986-87*, Ottawa: Department of Fisheries and Oceans, 1988.

8. *Ibid.*

9. See, Canada, *Canada—New Brunswick Subsidiary Agreement on Fisheries Development*, signed August 27, 1984, Department of Fisheries and Oceans and the New Brunswick Department of Fisheries.

10. *Ibid.*

11. See, among others, Report of New Brunswick Task Group on Aquaculture, Government of New Brunswick, June 28, 1988.

12. Canada, The *Canada—U.S. Free Trade Agreement and Fisheries*, Ottawa, Minister of Supply and Services, 1988, p. 7.

13. *Ibid.*

CHAPTER FOUR

IMPORTANCE OF THE FISHING INDUSTRY FOR THE PROVINCE

Global Economic Contribution

In New Brunswick, there were no less than 20,000 people who were economically dependent on the fishing industry in 1987. Some 6,500 fishermen and aids were involved in primary exploitation, while the processing sector employed from 2,000 to 13,000 workers depending on the season. About 500 more worked in related fields: boat building and repair, equipment repair and supply, transportation, etc. In 1987, the fishing industry sustained 7.5 % of all the province's workforce. Counting only the goods producing activities, that is excluding the tertiary sector, the harvesting and processing of sea products occupied 30 % of workers in peak periods.

The industry's primary sector generated revenues of 116.5 million dollars for the province in 1987, and the secondary sector about 350 million. The fishing industry is thus directly responsible for about 7 percent of the gross domestic production of the goods producing activities as a whole. The fish processing sector's contribution to the provincial economy is greater than that of several other sectors. As regards added value, for instance, the fish processing sector is ahead of the beverage sector by 15 percent, of the dairy sector by 64 percent and of the metal sector by 48 percent. A systematic description by manufacturing sector is given in chapter 6.

In relative terms, however, the fishing industry is less important for New Brunswick than in the other Atlantic provinces. Its contribution to the gross domestic production of the goods producing activities rose to 17 percent in Newfoundland, 14 percent in Prince Edward Island, and 16 percent in Nova Scotia, in 1984.

In 1987, the 6,500 or so fishermen registered in the province delivered their products to 142 processing and marketing establishments. In peak periods, these establishments employed about 13,000 workers, for a yearly average of about 4,500. On the other hand, the fishing industry's primary and secondary activities sustained the demand for various products and services which were totally or partly provided by local entrepreneurs. There are more than sixty such businesses, mainly small and medium sized, which are directly linked to the province's fishing industry. About twenty of these build and repair fishing boats, be they wooden, fiberglass or steel. There are also several machine shops that repair the equipment and machinery of both fishing boats and processing plants. Other businesses supply materials of all kinds, from fishing tackle to sophisticated electronic equipment. Some cater to the industry by providing services such as transportation of products when plants do not have the means to look after their own deliveries or supplies. Together, these fishery related businesses employed more than 500 workers in 1987. Of course, this does not take into account the numerous auxiliary services provided to the industry by consultants in law, accounting, insurance, etc., which often find in the fishing industry an important clientele for the maintenance of their activities. We have also excluded all those who support the fishery, namely the employees of both federal and provincial departments and agencies who regulate the industry and provide technical and financial assistance (protection, research, fishermen training, etc.). These jobs are all the more important in that they are high quality:

skilled, well paid and often ongoing. There are about 400 jobs in the province that are linked to these support services. It is to be noted, however, that these tertiary jobs are mostly concentrated in urban centres (mainly Moncton and Fredericton), where there is no fishing activity as such but where the federal and provincial fisheries departments are located.

It is however through its fish processing activities that the fishing industry has the greatest impact on employment and income. Even if they are highly seasonal, these processing related jobs provide a substantial income which, combined to unemployment insurance payments, allow for an acceptable or at least sufficient standard of living to curtail the traditional outmigration of young workers. That is why it is precisely in the regions where fishing is a widespread activity that one sees the greatest economic dependency.

Regional Contribution

The fishing industry is the predominant activity in most coastal communities along the Bay of Chaleur, the Gulf of St. Lawrence, the Northumberland Strait and the Bay of Fundy. These regions correspond to the following geographic areas: northeastern New Brunswick (from Restigouche County to the Miramichi estuary) which will be designated as region 1; eastern and southeastern New Brunswick, along the coast of the Northumberland Strait, from the northern limit of Kent County to Cape Tormentine (region 2); and finally southwestern New Brunswick, along the coast of Bay of Fundy (region 3). (See enclosed map). These three sub-provincial regions form entities which are more or less homogeneous as regards fisheries. Their operations and socio-economic conditions vary from one to the other, which conveys a rather uneven dimension to the industry.

Table 4.1 shows the relative importance of the fishing industry in these three regions. Clearly, the industry's contribution is more significant in region 1 or, more specifically, in the Acadian Peninsula where it is geographically centered. The northeast claims more than half of the volume and value of the province's landings. As for the jobs generated by this industry, region 1 has more than the two other regions taken together. Plants in the Peninsula are bigger and can generally be used for several species. There is an average of 150 jobs per establishment in this region versus 81 in the southeast and only 43 in the southwest (see table 4.2).

Plants in the northeast are generally more diversified with respect to production. In addition to shellfish, they process several species of groundfish and pelagic fish.

Region 2, which is confined to the Northumberland Strait, is the second most important fishing area as far as value of the landings is concerned. It is however the least diversied. Fishermen depend on one species (lobster) for 75 percent of their income, and no other species represent more than 4 percent of the landings in terms of value. The strong dependency towards this lucrative species explains the disproportionate ratio between the province's share of the landed volume (9.4 percent) and the landed value (20.4 percent).

Table 4.1

Importance of the Fishing Industry in Each of the Sub-regions, New Brunswick, 1987

	Region 1 Northeast	(%)	Region 2 Southeast	(%)	Region 3 Fundy	(%)	New Brunswick
PRODUCTION ('000$)							
Landings	68,211	58.5	23,872	20.4	24,603	21.1	116,686
Products (prel. figures, 1986)	247,543[1]	72.0			96,174	28.0	343,717
EMPLOYMENT	11,338	55.7	5,679	27.9	3,332	16.4	20,349
Fishermen and aids	3,634	55.3	1,528	23.3	1,405	21.4	6,567
Processing (max. number)	7,445	56.3	3,984	30.1	1,806	13.7	13,235
Related activities	259	47.4	167	30.5	121	22.1	547

[1] This figure applies to both regions: northeast and southeast.

SOURCE: For production, Fisheries and Oceans - Gulf region, Moncton. For employment, estimates from the Products and Manufacturers Index, Commerce and Technology, Fredericton. For the number of fishermen and aids, Fisheries and Oceans, Moncton.

Table 4.2

Employment in the Fish Processing Sector in New Brunswick, 1987[1]
(by size and by region)

Size	Northeast Est.	Northeast Empl.	Southeast Est.	Southeast Empl.	Fundy Est.	Fundy Empl.	Province Est.	Province Empl.
- 25	21	201	21	277	26	313	68	791
25-29	2	79	13	387	12	381	27	847
50-99	5	310	7	490	1	50	13	850
100-199	7	940	2	275	1	100	10	1,315
200+	12	5,745	9	2,725	3	990	24	9,460
Total	47	7,275	52	4,154	43	1,834	142	13,263

---

[1] Total number of employees listed on the payroll.

SOURCE: *Directory of Products and Manufacturers for New Brunswick, 1987*
Department of Commerce and Technology, Fredericton

The Bay of Fundy region seems more diversified in this regard, with at least four species representing 10 percent or more each of the total landed value. Herring fishing in this region (78 percent of catches) has a negative impact on the volume/value ratio in the province: 35.3 percent of the landed volume versus 21.1 percent of the landed value. Even if the scope of the fishing activities is not as evident in the Fundy region as in the two other regions, it is nevertheless in this region that the industry seems to have the greater stability. Production is much less seasonal than elsewhere, and the closeness of the American market facilitates the marketing of fishery products. For instance, the average price of lobster paid to fishermen in the southwest was almost double that paid to fishermen in the southeast and northeast in 1985. The average size of lobsters, together with the season, can greatly affect the prices paid to fishermen.

Socio-economic Characteristics of Fishing Regions

Before examining the relative importance of fisheries to the sub-regions, let us consider some general characteristics of this industry.

Unlike what is observed in the neighbouring provinces of Nova Scotia and Newfoundland, New Brunswick's fishing industry is not much vertically integrated. No fishing company has a real monopoly, although some have their own fishing boats and gear. Most plants get their raw material from independent fishing boats belonging to individuals.

Of the 142 establishments listed by Commerce and Technology in 1987, only 92 may be considered as processors, the rest being mainly traders. Table 4.2 shows the regional distribution of these companies by size (maximum number of employees).

It is interesting to note that 24 of these 142 establishments account for more than 70 percent of the jobs. The number of establishments is slightly higher in the southeast, but employment is mainly concentrated in the northeast where plants have an average of 155 workers. This average drops to 80 in the southeast and to only 43 in the southwest.

These plants process several species, but most of their production comes from lobster, snow crab and herring. Of the $315 million generated by fishery products in 1985, 227 million came from these three species, representing more thant 70 percent of the total value of fishery products. Note that these same three species also accounted for more than 70 percent of the landed value. Crab is processed basically in the northeast, and lobster in the southeast, with plants in the Fundy region mainly oriented towards herring and sardines.

The products which are processed and marketed in the province generally bring from 3 to 4 times as much, in value, as the landed species. For example, in 1985, landings totalled $84 million while processed products reached $315 million, for a product/landing ratio of 3.74. This means that in New Brunswick, for each dollar generated at landing, processors got at least $3.74. The average for the Atlantic region is only $2.36, as shown in table 4.3.

In fact, New Brunswick claimed 12.3 percent of the landed value of species harvested in the Atlantic, and 19.5 percent of the processed value. Note that pelagic and estuarine species contributed largely to this high average. Some processors get their supplies from outside the province, particularly in the case of lobster, herring, crab and tuna. The Research and Productivity Council estimates that close to a quarter of the raw materials

Table 4.3

Value of Species Landed and of Products Processed, 1985

('000 $)

Group	New Brunswick Landed	Processed	P/L[1]	Atlantic Region Landed	Processed	P/L
Groundfish	7,721	14,928	1.93	297,119	741,265	2.50
Pelag. & est.	14,059	146,115	10.39	54,491	239,085	4.39
Molluscs	10,629	13,951	1.31	72,034	91,985	1.28
Crustaceans	51,797	131,329	2.54	260,401	400,350	1.54
TOTAL	84,206	315,184	3.74	684,045	1,613,900	2.36

[1] Ratio between processed and landed value.

SOURCE: For New Brunswick, Fisheries and Aquaculture, Fredericton
For Atlantic Region, *Statistical Highlights of Canadian Fisheries*, Fisheries and Oceans, Ottawa, 1987.

processed in New Brunswick come from outside. Some quantities of lobster and herring are obtained from neighbouring provinces, while tuna is mainly bought abroad. As well, large quantities of fish unloaded in the ports of neighbouring provinces, and therefore not counted in New Brunswick's landings, are rerouted to the province's plants. These external supplies have become indispensable due to the fact that the processing capacity is much greater than the available resources.

This situation is due, on the one hand, to the large increase in the processing capacity of fish plants in the last ten years and, on the other hand, to the progressive erosion of the stocks, especially snow crab. The excess capacity which resulted, both in processing and in harvesting, led to strong competition between the fishing and processing enterprises of the province. In order to rebuild the stocks and ensure some kind of viability for commercial fishing in the Atlantic, the Fisheries and Aquaculture Department has exercised a much closer control on the resources, thereby contributing to the under-utilization of the fishing fleet and making it more difficult for processors to obtain supplies.

The relative importance of the fishing industry to the province's sub-regions is even more real when their economic and social structure is examined. Taking into consideration the relative level of economic need of the province's three fishing regions, one sees how much this industry is vital not only for the economic survival of the fishing regions, but also for maintaining the regional balance. Indeed, regions whose economy depends on the fishery are those that suffer the most from cyclic instability and that generally depend the most on public transfers, especially unemployment insurance. For instance, figures published by Statistics Canada in 1982 show that transfers (unemployment insurance, family allowance, various pensions) represented 20.7 percent of the overall incomes earned in New Brunswick. This dependency exceeded 25 percent in at least six counties, of which four have the fishing industry as their economic base: Kent (40.1 percent), Gloucester (27 percent), Northumberland (20.4 percent), and Charlotte (25.5 percent). This high level of dependency in these regions is due, for the most part, to the high seasonality of employment, especially in fishery related activities. If the relative weight of unemployment transfer payments as a whole is already high at the provincial level (in the order of 45 percent), it is even higher in the regions where fishing is the predominant industry. Indeed, the weight of unemployment rises to 70 percent of the transfers in Gloucester and Kent! These two counties account for 16.8 percent of the provincial population, but receive 29.8 percent of the unemployment insurance benefits paid to New Brunswickers! The situation is quite different in Charlotte where, due to favorable climatic conditions, the fishing season extends over a much larger period.

Even if these counties are more or less homogeneous entities and if other seasonal industries can contribute, either positively or negatively, to this excessive dependency towards unemployment benefits, the same can be said for the sub-regions. To this effect, we will retain the regions which roughly correspond to those established by the industrial commissions.[1]

When comparing the various regions defined by the regional commissions, one notices that their economic structure differs considerably, as do their needs. However, they do share one common feature, namely a not very diversified economic base. In the Acadian Peninsula, for example, fishery related jobs represent between 60 and 70 percent of the economic base. In Kent, the proportion exceeds 50 percent.

The economic base of these regions is greatly weakened by the high seasonality of employment and the low productivity linked to fish processing activities. Statistics provided by the Economic Expansion Commission of the Peninsula in 1983 show that more than two thirds of the jobs in the Peninsula are seasonal or part-time; in the fishery sector, jobs are almost exclusively seasonal! In the east and southeast, the same applies with respect to fishery related jobs. Given the relative importance of fishery related jobs, it is not surprising that these regions are in last place among provincial sub-regions when compared as to socio-economic indicators.

Table 4.4
Economic need index and related indicators
(Development Commissions, 1980-82 average)

Rank	Population	Economic Need Index	Earned Income per capita NB=100	Unemployment Insurance[1]	Social Assistance[2]	Weeks worked[3]
1 Peninsula	56,030	1.85	67.4	33.6	860$	15,2
2 Kent	32,035	1.73	68.8	32.2	855	15,9
3 Grand Falls	28,525	1.02	72.4	29.3	746	19,1
4 Miramichi	43,790	0.78	83.9	25.7	736	19,4
5 Chaleur	42,665	0.38	95.4	23.4	703	20,6
6 Restigouche	37,160	0.36	94.0	22.7	706	21,1
7 Southeast	31,900	0.22	88.8	22.2	636	21,3
8 Northwest	28,815	0.20	94.0	20.9	684	22,0
9 Carleton	26,020	0.06	82.0	19.0	607	23,0
10 Maritimes-Centre	99,370	-0.78	106.7	15.5	521	24,9
11 St John-Fundy	163,835	-0.90	110.1	15.2	503	25,1
St-John (county)		-0.80	114.1	14.0	543	25,3
Charlotte (county)		-0.43	101.3	22.7	541	23,8
12 Capital	103,355	-0.92	109.5	13.6	525	25,9
PROVINCE	695,500		100.0	20.4	814	22,6

1 Percentage of population living on unemployment insurance
2 Average annual payments per family
3 Average number of weeks worked.

SOURCE: *An Evaluation of Economic Circumstances of Sub-provincial Regions in New Brunswick*, prepared by the DPA Group Inc. for the Department of Regional Industrial Expansion, Province of New Brunswick, Fredericton, 1984.

A study made for DRIE in the early 80s established economic need indexes for each of the 15 counties of the province, as well as for each of the regions defined by the regional industrial commissions. These indexes take into account 23 variables corresponding to the level of development and dependency of each region. With respect to the counties, the indexes varied from 1.79 for Kent, the county with the greatest need, to -1.26 for York, the one with the most enviable position.

However, the indexes for the sub-regions, such as those defined by the development commissions, give a better indication of the infra-regional disparities in New Brunswick. It is also easier to relate certain fishing regions to those appearing in table 4.4.

This summary table shows unequivocally that major economic disparities exist between certain regions of the province, especially between regions whose economy is based essentially on the development of natural resources, such as fishery products. It is observed that the Peninsula and Kent regions, where fishing activities are the most widespread, are those with the greatest needs. The average income earned in these regions is below the provincial average by more than 30 percent. Although the St. John/Fundy region seems to enjoy a rather advantageous position among the province's sub-regions, the data are strongly influenced by the St. John region whose diversified economic base helps to raise the level of the main indicators. If one considers Charlotte county alone, where fishing is largely concentrated, its position is slightly lower in the infra-regional hierarchy, although it still remains favourable compared to the other fishing regions of the province.

Many New Brunswick communities (55 according to the Kirby Report) depend on the fishing industry for their economic survival. This industry is not only vital in terms of direct income (harvesting and processing), but also, if not more, in terms of its contribution in unemployment insurance payment transfers. Just imagine, for a moment, the flow of income that this source brings to a region like the northeast, for example. Approximately 6,500 plant workers are elligible for unemployment benefits in this region. At an average weekly salary of $254 (official figure from Statistics Canada, established for the province's fish processing plants), and assuming that the average unemployment period does not exceed 30 weeks, we are talking about $30 million in unemployment benefits, for one year only. If the allowances paid to the region's 3,600 fishermen and aids are added to this, we have 18 million dollars more (let's suppost 3,000 beneficiaries x $250/week x 24 weeks). Therefore, those whose work is directly related to fishery in the northeast benefit from a direct influx of about 50 million dollars simply through the unemployment insurance program. These estimates show more clearly than any other exercise the vital importance of the fishing industry to the economy of the province.

It goes without saying that any strategy aimed at rationalising the fishing industry in New Brunswick will have a direct impact on the economy of the fishing regions, in particular the Peninsula and the southeast.

NOTES TO CHAPTER FOUR

1. The Peninsula Economic Expansion Commission for the northeast; the Kent Industrial Commission and the Southeast Economic Commission for the southeast; and finally the St. John/Fundy Region Industrial Development Commission for the southwest. For this latter region, we can just as easily consider Charlotte county as the target region since that is where the fishing industry is mainly centered.

CHAPTER FIVE

PRIMARY DEVELOPMENT

The fishery is different from other primary sectors in two ways: it is concerned with developing a renewable resource which is also considered a collective good. As such, there is extremely strong competition among the numerous operators in the primary sector. Until the 70s, Canadian authorities did not respond much to the use of domestic fishing banks by foreign fleets. There were few regulations to control catches and everyone could freely use this common good which unfortunately was perceived as being inexhaustible considering the modest means of harvesting then available.

The growth of the fishing fleet in Canadian waters, and especially the rapid increase in its haveesting capacity through numerous technological breakthroughs, led to a serious over-utilization of stocks. In zones 2 (Labrador coast), 3 (eastern and southern Newfoundland), and 4 (Gulf and southern Nova Scotia), domestic and foreign catches rose by at least 1,000,000 metric tonnes during the 60s alone, an increase of more than 80 percent in the space of ten years. Although Canadian fishermen increased their catches, it is the foreign fleets that used these resources the most intensively, thus reducing the Canadian share of the catches at the end of the decade: from 15 to 5 percent in the Labrador waters, from 40 to 25 percent off Newfoundland, and from 75 to 50 percent in the Gulf, southern Nova Scotia and Bay of Fundy.

Given such a trend and considering the severe erosion of certain stocks, Canada's declaration of its 200 mile economic zone in 1977 was more than desirable. Since then, the five provinces of eastern Canada have been sharing among themselves this "common" good that is to be found in the Atlantic. However, the Canadian fleet and fishing efforts have expanded so rapidly that our harvesting capacity is now much larger than certain stocks. We are still faced with overfishing problems on the eastern flanks of Newfoundland's banks (Bonnet Flamand) and around the islands of St. Pierre and Miquelon.

The Atlantic fishing industry falls under two jurisdictions, one federal and the other provincial, which leads to organizational complications within any given province. In fact, it is one of those rare industries, maybe the only one, where entrepreneurs and investors have absolutely no control over the raw materials that they extract. Moreover, players in the industry are numerous: 5 provinces, 35,000 fishermen of various classes (inshore, semi-offshore, offshore, and sub-classes by type of fishing), 500 processing plants belonging either to small independent entrepreneurs, cooperatives or vertically integrated multinationals, 45,000 workers and, finally, more than 1,300 communities depending on the fishery for their economic survival. It is within such a puzzle that Fisheries and Oceans must fulfill its mandate, which is to manage and regulate the fishery resources of eastern Canada.

Provincial Distribution of Resources

A wide variety of fish and shellfish species are caught along the Atlantic coasts. Catches are divided among various fleets based in five provinces, which gives each region certain characteristics according to the type of fishing and the species landed. These differences are shown in table 5.1.

Table 5.1
Quantity and Value at Landing by Province, 1987
(thousands T and millions $)

	Groundfish		Pelagic and Estuarine		Shellfish		Total		Provincial Shares	
	Q	V	Q	V	Q	V	Q	V	Q	V
Nfld.	391	213	82	31	22	42	495	287	39.1%	25.6%
NS	275	232	108	29	101	268	484	530	38.2	47.2
NB	20	14	104	21	25	82	150	116	11.8	10.3
Que	64	47	9	5	24	74	97	126	7.7	11.2
PEI	13	7	15	4	14	54	41	64	3.2	5.7
ATL	763	513	318	90	186	520	1,267	1,123	100.0	100.0

SOURCE: Data provided by DFO's regional offices in Moncton, Halifax, St-John's and Quebec

Groundfish

Catches in Atlantic waters are largely represented by groundfish, which accounted for 60 percent of all takes in 1987. Cod dominated in this category with 60 percent of landings. It is followed by flatfish (16 percent), redfish (11 percent), pollock (7 percent), and haddock (4 percent). Nova Scotia and Newfoundland claimed 87 percent of the 763,000 tonnes of groundfish caught in 1987. In the Gulf, Quebec ranks first with 64,000 t, compared to a modest 20,000 t for New Brunswick whose fishermen are pioneers in the harvesting of certain species, especially redfish. Prince Edward Island is last with 13,000 t.

Since the early 70s, New Brunswick has declined considerably with respect to groundfish. At the turn of the decade, landings for this group of species were above 30,000 t due to the abundancy of redfish, but it dropped to about 20,000 t towards the middle of the decade. Since then, we have been stagnating at this level, despite the exclusion of foreign fleets from our territorial waters. Our share of groundfish catches in the Atlantic has thus dropped from 6.2 to 2.7 percent since 1970. This evolution is shown in table 5.2

Table 5.2

Volume of Groundfish Landed by Province

('000 T)

Year	Nfld.	NS	Que.	NB	PEI	Atlantic
1970	278,0	143,2	57,5	32,7	15,3	526,6
1977	278,3	165,8	41,1	18,9	11,3	515,4
1978	325,0	205,1	50,0	17,5	14,5	612,1
1979	374,2	230,9	56,6	23,5	17,3	702,6
1980	380,6	261,7	56,5	20,9	20,1	739,8
1981	392,9	278,0	62,9	22,6	23,3	779,6
1982	425,6	293,5	58,9	23,4	18,9	820,3
1983	388,7	282,1	53,5	21,6	20,3	766,1
1984	371,6	269,9	56,2	17,2	20,2	735,1
1985	386,3	288,0	57,3	20,6	15,9	768,1
1986	407,8	293,9	55,9	22,4	14,8	794,7
1987	391,2	275,1	63,8	20,4	13,0	763,4

SOURCE: *Annual Statistical Review of Fisheries* for data up to 1984, and DFO's regional offices for 1985-1987.

From 1977 to 1982, following Canada's declaration of its 200 mile economic zone, all provinces increased their groundfish catches. New Brunswick had the worst performance in this regard, with only 4,500 t more in 1982 than in 1977. Newfoundland dominated with 147,000 t more in 1982, while Nova Scotia, with 128,000 t, had the highest growth. Of course, these provinces were able to benefit from the restocking of zones 2J and 3KL in the north and east of Newfoundland. In the case of cod, for instance, the total allowable catch (TAC) in these zones increased from 170,000 t in 1979 to 266,000 t in 1984. However, 80 percent of groundfish quotas in this region were allocated to offshore fleets belonging for the most part to large companies from Newfoundland (FPI) and Nova Scotia (NSP). In the Gulf, New Brunswick was clearly outdistanced by Quebec (17,800 t) and even Prince Edward Island (7,600 t) as regards additional groundfish catches between 1977 and 1982. If comparisons are made over a longer period, let us say from 1970, New Brunswick is the only province, along with Prince Edward Island, to have had a net loss in volume captured (-12,000 t). During that same period of time, Quebec fishermen, confined to the Gulf as were their New Brunswick counterparts, nevertheless succeeded in increasing the level of their catches by at least 6,000 t. Still in relation to 1970, Newfoundland and Nova Scotia raised their production by 113,000 t and 109,000 t, respectively. In their case, however, the gains were mainly made between 1977 and 1982.

In the present context of Atlantic fisheries, the outlook for New Brunswick is not too promising with respect to groundfish. First, cod landings, which peaked in 1983, dropped by 37 percent between 1973 and 1987 (see table 1 in appendix). Flatfish catches have been maintained in the last few years, while those of hake dropped considerably. Pollock landings fluctuated greatly, and haddock catches remained minimal. As for redfish, a species once plentiful in the Gulf, landings seem to have been on an upswing since reaching their lowest level in the early 80s. But with 4,000 t in 1987, we are still far from the 15,000 t caught annually in the early 70s. Nevertheless, New Brunswick's best chances of increasing its groundfish landings in the years to come still lie with redfish.

Shellfish

If groundfish predominates as far as quantities landed in the Atlantic are concerned, shellfish is slightly ahead in terms of value ($520 million versus 513), with less than 15 percent of the volume. New Brunswick was able to raise its catches of this widely available resource along its coasts, from a yearly average of 10,000 t between 1970 and 1975 to a high of more than 34,000 t in 1982. For the Atlantic as a whole, New Brunswick's share went from 7 to 25 percent between 1977 and 1984, but fell back to 14 percent in 1987 following the drastic drop in crab landings. In Newfoundland, shellfish landings kept in line with squid catches, which have greatly diminished since the early 70s, except for 1979. However, Nova Scotia is by far the largest producer of shellfish, thanks mostly to its large scallop catches on Georges Bank and to its vast lobster reserves.

New Brunswick may have made considerable progress in its harvesting of shellfish, but the same is also true for Quebec and Prince Edward Island, although theirs was steadier, as shown in table 5.3 below.

Table 5.3
Landed Volume of Shellfish by Province
('000 t)

Year	Nfld.	NS	Que.	NB	PEI	Atlantic
1977	39,4	133,4	7,8	14,2	5,9	200,7
1978	57,9	136,3	9,3	17,2	7,2	227,9
1979	104,9	124,3	13,1	21,4	8,9	272,6
1980	50,9	79,2	14,6	21,6	8,1	174,4
1981	41,7	95,0	15,8	29,6	9,0	191,1
1982	31,1	75,8	19,5	34,3	9,4	170,1
1983	18,3	61,7	19,3	31,7	11,0	142,0
1984	17,8	47,4	22,0	33,3	10,4	130,9
1985	17,9	58,4	26,5	33,4	12,4	148,6
1986	18,1	74,1	26,5	31,4	15,4	165,5
1987	21,5	101,1	24,4	25,4	13,8	186,2

SOURCE: Up to 1984, *Annual Statistical Review of Fisheries*, Ottawa. From 1985 to 1987, regional offices of Fisheries and Oceans (Moncton, Halifax, St-John's, and Quebec).

These two provinces greatly improved their respective positions in the Gulf, especially in the last few years, whereas New Brunswick lost some ground due to the drop in crab fishing. Quebec, which has also been supported by its recent performance in groundfish harvesting, has thus been able to pull ahead of New Brunswick for the first time as regards total landed value, all species included (see table 5.1).

Expectations for shellfish harvesting in New Brunswick can only be modest. Considering the progressive exhaustion of crab stocks, it seems useless, at least in the medium term, to try and bring the level of catches back to that of the 1981-86 period, where it averaged more than 30,000 metric tonnes per year. Crab alone was responsible for 52 percent of shellfish catches during that period; in 1987, its contribution was limited to about 30 percent. Since crab landings in 1988 were similar to those of the previous year, with a much more intensive fishing effort, forecasts for this resource are not very encouraging. Given certain other regions' experience with this species, especially Alaska's, one can only be very conservative in this regard.

We can always count on 25,000 t of shellfish for New Brunswick, thanks mostly to lobster whose catches have kept increasing since the mid-70s (see table 1 in appendix). Lobster landings rose from 2,200 t in 1974 to 4,300 t in 1980, and to 7,400 t in 1987. This species accounted for 20 percent of all shellfish caught in 1974, compared to about 30 percent in 1987, which is as much as crab. Lobster fishing is heavily regulated, and the harvesting capacity is much greater than available resources. It appears that lobster stock levels are at the peak of their cycle, and it has been rising since 1975. Preliminary 1988 data for lobster catches in the province as a whole are nevertheless comparable to those of 1987. Some new American regulations aimed at increasing the size of lobsters imported from Canada could restrict somewhat this species' contribution, in terms of volume, at least for a while. On the other hand, such measures may, in the long run, improve the performance of this sector by increasing the average unit weight, especially since "markets" are more lucrative than "canners." Indeed, an increase in the minimum size of lobsters fished in the east of the province could only be beneficial to the industry, and especially to fishermen. Even if at first such a measure resulted in a lower landed volume, it would later allow for stronger growth of the lobster population through the renewal of the reproductive stock.

In the case of shrimps, the third most important shellfish in terms of landed volume, we can't say that these last few years' performance has been very good. Even though New Brunswick fishermen have gradually increased their catches since the early 70s, the maximum level of landings was reached in 1981, with a modest 3,000 t. After falling to less than 1,300 t in 1984, catches rose to 2,400 t in 1987. Of course, these landings include northern shrimp for which an operating licence has been delivered to two New Brunswick companies (Carapro and Coopérative des pêcheurs de l'Ile) in 1978. It appears that the province's fishermen have until recently neglected this species, as well as redfish, because of their lower economic yield as compared to that of other species. However, with the increasing scarcity of the various groundfish species, and the near-collapse of the crab sector, the working of shrimp banks should become more intensive, especially since the commercial climate seems to be more favourable. This is why, for the first time since the appearance of the TACs, the Gulf quota was entirely captured in 1988. Present shrimp catches in the Gulf are restricted to 12,600 t, while those of northern shrimp are set at 15,600 t, for a possible total of 28,200 t. As is well known, New Brunswick captures only 8 percent of these quotas.

With respect to molluscs, the outlook is good for three species: scallops, clams, and oysters. Although they are not as lucrative as crustaceans, these species are nevertheless considered as having a high commercial value. In terms of volume, they totalled 4.6 percent of provincial landings for all species in 1987, and represented 8.5 percent of the total landed value.

Three quarters of the scallop catches in New Brunswick are made in the Bay of Fundy, and the rest mainly in the Northumberland Strait. This species has been overfished following the expansion of the Fundy fleet (from 54 boats in 1972 to 96 in 1986, with 14 from New Brunswick), and the intensification of fishing efforts. In New Brunswick, scallop fishing reached a peak with 5,800 t in 1981, and then gradually declined to 3,000 t in 1987. Considering present fishing efforts, it is unlikely that scallop stocks in the Bay of Fundy, as well as in the Northumberland Strait, will be greatly renewed. Cyclic fluctuations affecting this resource are unpredictable, as seen on the Georges Bank.

Clam harvesting has grown somewhat in the province these last few years. From 1,000 t in 1977, catches rose to 2,600 t in 1982 and 4,000 t in 1986. However, official figures for this type of fishing, which remains basically "traditional," do not reflect the whole story. The most heavily harvested bank, that of Heron Island in Chaleur Bay, seems to show signs of fatigue.

For several years now, oyster landings have been at a low level, at least according to official figures which mainly pertain to the Caraquet and Miramichi public banks. Many private oyster "bars" are a source of harvesting, often meant for domestic consumption. This sector's potential is far from having been reached since Caraquet Bay alone could produce up to three times as much as is presently harvested, excluding the numerous hectares leased in the whole Peninsula area. The potential is just as promising for the Miramichi banks.

Pelagics

Pelagic and estuarine fishery resources are much more important for New Brunswick than for any of the other Atlantic provinces (see table 5.1). More than two thirds of our landings consist of pelagic or estuarine species, which however represent only 18 percent of the total landed value. Herring has always been first in this category, with about 90 percent of the catches; next are alewife, mackerel and smelts. Tuna used to be a major contributor in the mid-70s, but its part is now practically nil. As for Atlantic salmon, the fact that it comes much less frequently to New Brunswick waters in its seasonal migration has led to a ban on its fishing for the last five years. All in all, our highest expectations are based on herring as far as pelagic and estuarine species are concerned.

In the late 60s, herring was plentiful along the coasts of the province, and international demand was strong for high protein animal food products, especially for chicken. Given its availability and low price, herring became a choice candidate for this type of product which required a simple cooking and meal reduction process. Such being the case, we hurriedly built fish meal plants and bought herring purse seining boats in order to supply these raw material intensive plants. In short, we heavily invested in an industry albeit promising, but mainly oriented on high volume production. With such means and considering the abundance of the resource, catches were phenomenal: 150,000 t per year, on average, from 1968 to 1972. But already in 1971, the first signs of exhaustion appeared with landings of only 110,000 t. In 1974, there was talk of a collapse, with 70,000 t. But things picked up a little until 1978 (106,000 t), only to fall apart in 1981, with 43,000 t. Severe regulatory measures were then implemented to the point of paralyzing the province's seiners during the greater part of the year. From then on, seiners were only allowed a modest part of the quotas allocated. In 1987, for example, they only caught 13,500 t in the Gulf compared to 62,000 t for inshore fishermen.

Herring fishing in New Brunswick thus returned to being an essentially coastal activity. Even if the methods and equipment used by fishermen have greatly improved, fishing efforts have to be limited. Unfortunately, herring is now fished mainly for its roe and not for its meat, which results in some wastage of the resource. The challenge now facing the industry consists in re-enhancing this product for human consumption. In the southeast, the traditional smoked and dried herring industry succeeds in maintaining itself, while in the southwest, the canning of herring and sardines remains an important activity. As for the stocks, there is not much to fear as long as we limit ourselves to inshore fishing, even though it has experienced strong growth in the last years in response to the Japanese craze for fish roe. Catches, which have been increasing since 1981 (43,000 t), reached 95,000 t in 1987. In spite of this positive trend, we must be watchful of the Japanese herring roe market, because it is trying to diversify its sources of supply in order to alleviate the recent rise in prices for this product. Our dependency towards this market is so critical that we have no way of offsetting an eventual withdrawal of the Japanese. Therefore, efforts must no longer be focused on the product itself, but on its diversification in order to develop specific niches in the world marketplace.

CHAPTER SIX

PROCESSING THE RESOURCE

The Global Context of the Industry

New Brunswick's fish processing industry is very diversified, so much so that one cannot speak of one industry only but of several sectors whose main goal is to process and market an array of marine species each one different from the other. Activities surrounding herring drying and smoking have no similarity to those related to cod filleting or tuna canning. These three species are completely different, either in their harvesting or their processing. Needless to add that each product commands its own market, and even its own market segment. Since the province's processing plants produce over a hundred different products from thirty or so fish and seafood species, the industry is a much heterogeneous one.

That said, we can nevertheless identify three common characteristics of the fishing industry as a whole: (1) a very strong growth of its processing capacity in the last ten years; (2) major structural changes in its production; (3) everincreasing constraints in its raw material supplies. We will also be dealing with some other common factors later on, such as the high production seasonality, the industry's low vertical integration, or its low productivity. For now, let's review the three points mentioned above.

With respect to the industry's recent growth, it is true that since 1977, when Canada established its 200 mile economic zone, the Atlantic fishing industry has been somewhat euphoric. As will be seen, this has brought to the brink of bankruptcy a large number of fishing companies, especially those oriented towards groundfish and herring. Even though New Brunswick processors were not in such a good position to benefit from the new opportunities offered by the economic zone, they were carried along by this optimism as well as by the sustained growth of shellfish landings (174 percent between 1976 and 1982). This trend was marked by the increase in snow crab landings, although other species such as lobsters, shrimps, scallops and, to a lesser degree, clams and oysters contributed to this tremendous growth. During that same period, in 1977 to be exact, herring fishing was banned in the North Sea, forcing European countries to look to the Atlantic herring stocks.

Such circumstances, which were encouraging to say the least, led to a considerable strenghtening of fishing efforts through unprecedented upgrading of the inshore and semi-offshore fleets. At the same time, the province's processing capacity was expanded through the construction of new plants, and especially through the extension and upgrading of existing plants, and the addition of new production lines. The processing capacity increased to such an extent that large quantities of raw materials, namely crab, lobster and herring, had to be imported from neighbouring provinces.

The processing overcapacity became even greater after certain fish stocks started decreasing in the 80s, particularly herring (-60 percent between 1978 and 1981), sole and other flatfish (-67 percent between 1979 and 1984), scallops (-50 percent between 1981 and 1986), shrimp (-59 percent between 1981 and 1984), and especially snow crab (from 20,000 t in 1982 to less than 8,000 t in 1987). Moreover, herring sales to European countries dropped dramatically during the 1981-1982 recession due to their currencies' progressive devaluation, as well as the renewal of the herring stocks in the North Sea. As for the shellfish industry, the situation became even more complex following major changes in demand, which saw canned seafood being gradually replaced by fresh and live products or even frozen whole products requiring much less processing. As regards herring, the demand changed mainly towards roe, which requires little processing but entails some "wastage" of the resource. Thus, after accounting for 80 percent of the fresh fish production in 1980, herring's contribution fell to 58 percent in 1980 and to less than 1 percent in 1985. On the other hand, its canned production rose from 43 percent in 1975 to 58 percent in 1980 and 63 percent in 1985, mostly in the form of sardines. In 1980, snow crab production was divided among three sub-products: sections and claws (33 percent), fresh and frozen meat (32 percent), and canned meat (35 percent); in 1986, the percentages were 68 percent, 31 percent and 1 percent, respectively. In the early 80s, lobster production was mainly frozen in-the-shell (75 percent) and canned. We now produce a lot of lobster meat, and export increasing quantities of live lobsters.

As for the third point mentioned above, we do not have precise figures concerning our processors' external supplies in raw materials. A study by the provincial Research and Productivity Council estimated that in 1980, 24 percent of New Brunswick plants' supplies came from outside the province, a figure which seems rather high. It is to be noted however that in the southeast processors import large quantities of herring and especially lobster from neighbouring provinces. From 1980 to 1984, for instance, the average production level for lobster exceeded that of landings by 30 percent; an average of 41 percent was established in 1983. Similarly, cultivated salmon is not counted in the landings, but its 1987 production is estimated at more than 3,000 tonnes. The same goes for tuna, whose production (7,500 t in 1985) depends entirely on external supplies. Trucking of fish captured by New Brunswick fishermen but unloaded in neighbouring provinces also results in an underestimation of the actual volume of our primary production. In the case of cod, for example, official landings have decreased by 15 percent between 1980 and 1987, whereas our exports have increased by 50 percent. No doubt that supplies from external sea ports are partly responsible for this unbalance between landed and exported volumes.

The decline in resources has led to ferocious competition for raw materials among producers. In New Brunswick, approximately 30 crab processing licences have been allocated, while only 81 boats have fishing licences for this species. In Quebec, no less than 47 crabbers are supplying just a few plants. Needless to say that many licensed processors in New Brunswick have never had access to a single crab leg. The situation has also gotten worse in the case of lobster, in spite of a gradual increase in catches. Some plants are offering "bonuses" and even job access privileges to family members of fishermen who sell them their catches. As will be seen later on, all this played a part in increasing production costs and maintaining the low productivity of our producers.

Due to the increase in external supplies and the changes in the kinds of products processed, the production level of fishery products does not vary much in the province, even though landings fluctuate a lot. For example, from 1975 to 1985, a standard deviation of 7.3 percent was observed in the average annual processed volume, versus 16.8 percent for landed volume. This means that landings fluctuated twice as much as production durint that period. Table 6.1 shows how this trend evolved.

Table 6.1

Evolution of Landings and Production in New Brunswick

	Volume ('000t)		Annual variation (percentage)	
Year	Landings	Production	Landings	Production
1975	123,8	83,3		
1976	115,3	92,7	-6.9	11.3
1977	130,2	82,9	12.9	10.6
1978	152,4	89,2	17.1	7.6
1979	137,8	102,2	-9.6	14.6
1980	106,4	96,8	-22.8	5.3
1981	103,0	96,9	-3.2	0.1
1982	109,9	87,4	6.7	-9.8
1983	108,2	80,6	-1.6	-7.8
1984	99,1	88,1	-8.4	9.3
1985	136,0	96,7	37.2	9.8
1986	143,0	77,8*	5.2	-19.5
1987	150,2	nd	5.0	nd

* Preliminary data provided by Fisheries and Oceans, in Moncton. It appears that the production level for 1986 is underestimated.

SOURCE: For landings, *Annual Statistical Review of Fisheries* for year 1975 to 1984; for subsequent years, data provided by regional offices of Fisheries and Oceans in Moncton (for the Gulf region) and Halifax (for the Fundy region). Production figures up to 1985 were provided by the Fisheries and Aquaculture Department, Fredericton.

As can be seen, an increase in landings does not necessarily mean a higher production volume. For example, in 1983-1984, landings decreased by 9,000 tonnes in New Brunswick, while the production volume rose by 7,500 tonnes. There is no doubt that several processors got their supplies from outside.

Cyclic fluctuations are more apparent with respect to groundfish processing, where imports of raw materials are very limited. The production volume in this sub-sector fluctuates more than the landed volume. As for pelagics, where external supplies are heavy, it is the opposite: cyclic variations in landed volume are twice as strong as for production. The situation is more complex in the case of shellfish because of the extreme importance of crab in terms of volume. Even though large quantities of lobster are imported for processing, this has not prevented major fluctuations in processed quantities. High prices for these products have nevertheless maintained the profit margins for this sub-sector's businesses.

All things considered, shellfish has gained considerable ground compared to the various groups of species processed during these years. As shown in table 6.2, this group saw its relative importance grow from 9 percent to 27 percent in terms of processed volume, and from 37 percent to 46 percent in terms of value.

Table 6.2

Distribution of Products by Groups of Species, 1975-1985

	Volume (t)		Value ('000$)	
	1975	1985	1975	1985
Groundfish	9,370	10,007	10,965	23,794
Pelagics	66,276	60,157	61,140	145,305
Shellfish	7,607	26,531	42,888	145,380
TOTAL	83,253	96,695	114,993	314,478
	(in percentage)		(in percentage)	
Groundfish	11.3	10.4	9.5	7.6
Pelagics	79.6	62.2	53.2	46.2
Shellfish	9.1	27.4	37.3	46.2
TOTAL	100.0	100.0	100.0	100.0

SOURCE: Compiled from data on production provided by the Fisheries and Aquaculture Department, Fredericton

Groundfish production practically stagnated during this period, whereas that of pelagic and estuarine species decreased by 6,000 tonnes. However, the value of products processed in this category increased considerably, thanks to the development of more lucrative products such as canned tuna and herring roe.

Competitiveness and Profitability of the Processing Sector

The fish processing sector's productivity in New Brunswick depends on numerous factors, both internal and external. For the internal ones, it can be assumed that they are first of all related to the plants' operating periods. Fixed costs for the off-season, or for any inactive period, are obviously added on to the overall expenses of the plants, which can greatly reduce profits at the beginning of a fishing season. The active period for any given plant depends on its location, on the species processed, and on the intended degree of processing. As a rule, large plants process several species, which helps in extending their operations over a longer period. In general, one can say that operating periods depend on the length of the fishing season, which in turn depends on quotas and fishing efforts, as well as on climatic conditions such as the presence of ice.

Full-time fishermen from the southwest operate the longest during the year, for an average of more than 30 weeks. Of all fishing areas in the Atlantic, it's in the Fundy region that fishing activities are the most prolonged. This region possesses the only tuna canning plant in Canada, and it is well known that the Canadian canned tuna market is worth $40 million per year. Unfortunately, this plant had to close in the fall of 1985 due to quality problems; however, it was able to resume its operations during the summer of 1988. Plants generally stay open for eleven months of the year in the southwest of the province. Indeed, this region has several advantages, thanks to its access to an excellent range of products (quality shellfish, especially large size lobster and parasite free cod), and its closeness to the American fresh fish market (New England). This latter asset is not insignificant when one knows, for example, that in 1985 the average price of lobster at landing was almost double in the southwest than in the southeast and the northeast. The changing behaviour of the American consumer, who is not as fond of small sized lobsters, could benefit even more the Fundy region at the expense of the other two regions of the province, at least as far as this particular species is concerned. Finally, the recent development of the aquaculture industry is proving to be another stabilizing force and a very lucrative one at that for the region's fishery. Salmon breeding now brings in $40 million to southwest producers and it is believed that it can reach $100 million in just a few years from now.

The situation is considerably different for plants in the northeast and the Northumberland Strait. First, the fishing season is cut short along these coasts due to the prolonged stay of ice. For larger plants that are able to process several species, operations may be extended for a maximum of eight months in the year. Those that only process crab and lobster remain active just a few months. Some small processors, especially those in the southeast who are involved exclusively with herring smoking and salting, can have even shorter operating periods, depending on the time required for fishermen to catch their quotas. In order to extend their active periods and make their operations profitable, some plants get their supplies from outside, especially in the case of lobster and herring.

In addition to climatic constraints, the key fish and shellfish stocks in the north and the east are subject to rapid and unpredictable fluctuations, which are often dramatic for the processing industry of these regions. For instance, herring landings reached gigantic proportions with the arrival of seiners in the 70s, but fell sharply afterwards and finally collapsed in the space of a few years. The crab fishery seems to have experienced the same setbacks lately, although fast rising prices have considerably softened the drop in harvesting. The impact is nevertheless being felt in processing plants. High expectations towards two other species (shrimp and redfish) were rapidly shattered in the north, although some improvements have recently been made.

To every promise held by a given fishery, there corresponded a sudden growth in fishing efforts and processing capabilities. Investments were however based on short and medium term forecasts and not motivated by excessive speculations as witnessed (in Newfoundland and Nova Scotia) after the declaration of the 200 mile economic zone. As will be seen later, this partially explains the apparent stability of New Brunswick processors during the recession (1979-1981), when the Atlantic groundfish industry fell to unprecedented levels. This slump led to the establishment of a task force which, under the direction of Michael J. Kirby, submitted its report in 1982. The 57 recommendations made in this report helped to develop the guidelines for the major restructuring of the Atlantic groundfish industry in 1983.

The external factors affecting the fishery's competitiveness are to a large degree dependent on the international economic climate and, more specifically, on that of seafood buying countries and other producing countries. For some products, markets can be very unstable, thus restricting investments. For example, the European market for filleted herring opened up to Canadian producers following the closing of herring fishing in the North Sea in the late 70s. It was also realized that the fishing industry is greatly affected by recessions such as that experienced in the early 80s (collapsing markets, falling prices, rising production costs, etc.).

Variations in the Canadian dollar's exchange rate can severely affect the industry. In fact, when our dollar tends to appreciate with respect to other currencies, the value of our exports is inflated in the short term. But medium and long term effects generally result in lower competitiveness for our businesses, and eroding markets. Our dollar's exchange rate does not depend solely on our domestic monetary policy, but also on the policies of the other countries involved. For instance, the devaluation of some European producing countries' currencies (Norway and Iceland) in the early 80s weakened the competitiveness of Atlantic producers on the American market. Fishing policies and regulations, as well as our client's tariff policies, can also disrupt the fish processing sector. And what about the effects on the industry of freer trade with our main trading partner? Various phenomena, either natural (such as toxins or parasites) or purely unfortunate (such as the Star Kist tuna affair), are so many disturbing elements that can destabilize the industry.

Because of all these imponderable factors, and because of the variety of processed products, the profitability and competitivity level of the fish processing industry in New Brunswick is highly variable. Nevertheless, comparisons and trends can still be established on a sectoral and provincial basis.

Interprovincial comparisons

In its most recent publication on the domestic manufacturing industry, Statistics Canada identifies several interesting characteristics of the fish processing industry in New Brunswick and the other Atlantic provinces. Data were also compiled on the major manufacturing sectors. At first glance, one notices that the relative importance of New Brunswick's fish manufacturing industry in relation to the Atlantic region as a whole is about one fifth (see table 6.3).

New Brunswick has 24.5 percent of all processing facilities in the Atlantic, 20 percent of all production workers, and 20.7 percent of all hours worked. This relative proportion is however lower for salaries paid (19.4 percent) and for added value of manufacturing activities (18.9 percent). Compared to the other Atlantic provinces, our performance is fairly firm with respect to shipments of goods of own manufacture, whose value reached 21.7 percent that of all products shipped by the four provinces. This strong relative value of shipments can be explained by the proportionally high sales of high commercial value shellfish, shipped by New Brunswick processors, and by the external raw material supplies intended for processing in the province. This latter factor is also responsible for the high ratio between processed value and landed value.

It is also interesting to note the downward trend of the products landings ratio. Indeed, this ratio has steadily decreased for the Atlantic as a whole; only Newfoundland and Quebec were untouched by this trend in the 80s. New Brunswick saw its average drop slightly, although it still leads in this regard, and by far (see table 6.4).

Table 6.3

Fish Processing Industry - Certain Characteristics for New Brunswick and the Atlantic, 1985

	New Brunswick	Atlantic	Ratio NB/Atl.
Number of facilities[1]	70	286	24.5 %
Production workers	3,577	17,925	20.0
Man-hours paid ('000)	7,322	35,337	20.7
Salaries ('000$)	47,207	242,808	19.4
Cost of raw materials ('000$)	172,464	712,207	24.2
Total production costs ('000$)[2]	225,063	988,135	22.8
Value of shipments of goods of own manufacture ('000$)	258,560	1,193,529	21.7
Added value ('000$)	83,678	443,424	18.9
Gross margin (GM) ('000$)[3]	33,497	205,394	16.3
GM relative to shipments	13,0	17,2	75.6
Hourly productivity ($)[4]	11,43	12,55	91.1
Overall productivity[5]	1,77	1,83	96.7

---

1 Statistics Canada only considers facilities with 20 employees or more. With respect to New Brunswick, this analysis involved about 70 facilities out of a possible 140, but included 90 percent of the jobs in the fish processing sector.

2 Includes salaries paid to production workers, raw materials and supplies, as well as energy costs.

3 Value of shipments of goods of own manufacture, minus total production costs.

4 Added value of manufacturing activities, divided by the number of hours worked.

5 Added value of manufacturing activities, divided by the salaries.

SOURCE: Compiled from Statistics Canada data on manufacturing activities, cat. 32-216 and 32-250.

Table 6.4

Value of Products Relative to Value of Landed Species

(Mean ratio for each region)

Region	1970-1975	1976-1980	1981-1985*	1970-1985*
New Brunswick	4,38	3,12	4,03	4,12
Nova Scotia	2,18	2,09	1,88	2,00
Prince Edward Island	1,84	2,11	1,64	1,81
Newfoundland	2,69	2,69	2,76	2,72
Quebec	2,27	1,89	1,97	1,99
Atlantic	2,58	2,48	2,39	2,45

* Up to 1984 for Quebec and Newfoundland

SOURCE: Compiled from data in the *Annual Statistical Review of Fisheries*.

In light of the above data, a stronger performance could be expected from the province's fish processing industry; but it is not the case. Because of relatively higher prices for raw materials, New Brunswick plants have a lower added value and, consequently, a lesser productivity.

New Brunswick processors pay considerably more for their raw materials than elsewhere: 67 percent of the total value of shipments was eaten up by these extra costs in 1985 versus 58 percent, on average, for the other Atlantic provinces. Even though salaries are slightly lower than in neighbouring provinces, this reduces the profits of New Brunswick processors, whose gross margin, that is sales minus direct production costs (raw materials, salaries, energy), is therefore much lower (see table 6.5). In 1985 the gross margin represented only 13 percent of the value of shipments in New Brunswick, whereas it exceeded 18 percent, on average, in the three other Atlantic provinces. It is clear, from the data collected, that the New

Brunswick fish processing industry is not as productive as claimed. It is definitely less profitable, on average, than in the rest of the Atlantic region. And this is not simply due to the latest economic crisis. Rather it is the result of a historical trend which, except in rare cases, has seen a lower productivity in New Brunswick plants. From 1970 to 1985, our productivity has indeed been lower, except in 1973, 1981 and 1983. For two of those years, i.e. 1973 and 1981, productivity in New Brunswick has not exceeded by more than 2 percent that of the three other provinces.

As for the gross margin, everything seems to point to the same conclusion. Since this latter indicator reflects the relative profit level of businesses, it is clear that New Brunswick processors are generally less profitable than those in neighbouring provinces as a whole. During the 16 years reviewed, our processing plants' average gross margin has remained 20 percent below that of the three other provinces. As in the case of our productivity, New Brunswick processors had a higher gross margin only in 1973 and 1983, which were two excellent years for this province's fisheries.

This does not quite agree with the Kirby report findings regarding the profitability of plants in the various Atlantic provinces. Among the regions which, according to the Woods Gordon sample, were the most profitable, two of them are in New Brunswick: the eastern coast (mainly the Peninsula region), and the Fundy region (southwest). If the years 1978-1981 are considered as a crisis period for the Atlantic fisheries, New Brunswick can't be dissociated from this context. The gross margin for the fish processing sector as a whole dropped considerably in New Brunswick during that period, reaching a minumum gross margin/sales ratio of 7.8 percent in 1981! In the other Atlantic provinces, the bottom had been reached a year before with a ratio of 11.8 percent. However, the problems for New Brunswick plants were not over since after picking up in 1983, produtivity fell back again, and with it the gross margin/sales ratio which was 50 percent lower in 1984 than the average observed in the three other provinces (8.8 versus 17.5 percent). In relation to its neighbouring provinces, that is the worst performance recorded by New Brunswick during the 16 year period under study.

Table 6.5

Gross Margin in Relation to Sales and Productivity
(New Brunswick and other Atlantic provinces, 1970-1985)

	PRODUCTIVITY(1)		GM/SALES	
Year	NB	Other provinces	NB	Other provinces
1970	1,80	2,10	13.8 %	18.6 %
1971	1,74	2,10	13.9	20.2
1972	1,96	2,20	19.0	21.9
1973	2,25	2,21	23.5	22.4
1974	1,84	1,87	15.0	15.4
1975	1,56	1,72	12.6	16.0
1976	1,47	1,61	10.0	13.4
1977	1,54	1,68	11.2	14.5
1978	1,58	1,84	10.6	14.7
1979	1,51	1,66	10.6	12.7
1980	1,45	1,44	9.8	11.8
1981	1,40	1,58	7.8	13.4
1982	1,67	1,74	12.6	16.3
1983	1,93	1,71	18.5	15.3
1984	1,45	1,75	8.8	17.5
1985	1,77	1,84	13.0	18.3
Average 1970-1985	1,63	1,73	12.5 %	15.7 %

1 Added value in relation to salaries, production sector only.

SOURCE: Compiled from data collected by Statistics Canada, cat. 32-216 and 32-250.

In the Kirby study, the sampling allowed for inter-regional comparisons. It should be mentioned however that these comparisons were based on net profits instead of on gross margins in order to account for administrative and overhead costs, and particularly interest charges.[1] Comparisons thus made emphasized the growing burden of interests on the debt incurred by the large processing plants of Newfoundland and Nova Scotia or, so to speak, the "group of five."[2] According to the Woods Gordon sample, the Atlantic plants that suffered losses between 1978 and 1981 saw their interest charges climb from 3 to 8 percent of their sales. And its precisely in the eastern and northeastern regions of Newfoundland, and in western Nova Scotia, that interest charges increased the most. It's in these regions, according to the Kirby report, that the biggest investments were made since the extension of the economic zone in 1977.[3]

It therefore appears that the financial slump in the Atlantic fishery mostly affected the large plants specialized in the production of frozen groundfish and herring, and those which had borrowed heavily to finance their expansion between 1978 and 1980. In fact, we are generally talking about the same plants in each of these two groups, as confirmed by the characteristics pertaining to the plants from the Woods Gordon sample: among the 23 plants considered as very profitable, none belonged to the "group of five!" On the other hand, 31 out of the 45 plants considered as unprofitable or having suffered a considerable loss of profitability came from this group.[4] In this regard, the Kirby report states:

> The high proportion of chronically weak plants in the Big 5 group has evidently been a severe drain on the resources and morale of these large companies. (...) Much of the so-called social burden of the fishery rests with the group of very unsuccessful

> plants that over time have drifted into the orbit of what was perceived to be the strong sector of the industry — that is, the large, integrated companies.[5]

In addition to seeing their profit margins melt because of saturated prices and demand and excessive direct production costs, these plants saw Canadian banks raise their prime rates from 9.7 to 19.3 percent between 1978 and 1981. The first factor could have been responsible for 50 percent of the financial decline of the plants in the sample, with 40 percent due to rising interest charges. During the same period, the short term debt of plants in the sample towards the banks more than tripled, increasing from 87 to 267 million dollars.

Of course, New Brunswick plants have also been exposed to the negative effects of the recession. However, their being more diversified and more modest in size enabled them to come out of this hard period without too much after-effects, even though their relative position in terms of productivity and profitability generally weakened at the end of the cycle. In 1981, encouraging signs could be observed in the productivity and profitability of Atlantic plants, except in New Brunswick where the downward trend persisted.

How does one explain, in light of the above, that fish processing plants in New Brunswick came out unscathed from this crisis which hit the Atlantic fishery so hard? Among all the factors which may have had something to do with it, there are two that were foremost: the variety of species processed and a more prudent management on the part of New Brunswick processors. As regards the first point, the rapid growth of shellfish, in terms of contribution to the industry, considerably helped to maintain the position of New Brunswick processors relative to their neighbours'. Between 1977 and 1984, shellfish landings rose from 14,000 to 34,000 metric tonnes, or from 15 to 62 million dollars. In relation to the provincial landed volume, the contribution of these species rose from 11 to 33 percent, whereas in terms of value, it increased from 45 to 82 percent of the total catches. That is quite a performance for this important provincial resource. This sector of the industry is characterized by the value of its production rather than its volume, whence its better performance. With such high unit value species, it is the top end of the market that is basically aimed at. But since demand remains strong for these products, competition for supplies is particularly fierce among producers. In the southwest, fish canning plants (herring, sardine and tuna) are generally profitable because they are competitive on international markets. Connors Bros., which has several plants of this type, is a leader in this area; it can even compete with some developing countries that benefit from lower production costs thanks, in particular, to cheap labour.

As for the other factor mentioned, that is a more cautious management on the part of New Brunswick processors, there are several reasons for it. Processing plants in New Brunswick are generally small and belong to local entrepreneurs. Being independent, they have a flexible administrative structure and can adjust quickly to changing market needs. With a few exceptions, they do not own fishing boats and equipment, which shields them from operating costs and risks. Finally, because of the strong competition between these numerous small producers, especially for supplies, they must generally have a cautious attitude towards investments. Still, some of these producers have acted aggressively in response to expectations for certain types of fishing, particularly in the lucrative crab industry, even if it meant rationalizing some operations and cutting their production costs as much as they could. Whenever possible, they have avoided massive borrowing; besides financial institutions were not prepared to finance such risky operations. The better performance of independent producers was explained in the following terms in the Kirby report:

> The smaller companies have operated in a less secure financial environment, being of less social importance than plants employing many workers. These smaller companies have had to accept more conservative financing — less debt, more equity — and therefore have been far better equipped to withstand a period of falling margins and rising interest rates. (...) This is one reason why the smaller, independent plants (...) often out-performed the Big 5 in 1980 and 1981, despite the alleged advantages of the latter group.[6]

We have seen earlier that the profit margin reported by the Kirby task force has eroded even more severely in New Brunswick. This trend seems to have been established a long time ago, which points to a very unrepresentative sampling from Woods Gordon regarding the financial analysis of New Brunswick producers. The fact that so little emphasis was put on the severe deterioration of the gross margin in New Brunswick can be explained by the desire to focus attention on the Atlantic groundfish industry or, more specifically, on the financial slump of some big Newfoundland and Nova Scotia companies. It could also be that it was not considered important to mention this deficiency since our processors are used to operate with extremely low profit margins without feeling the need to demand government assistance.[7]

Inter-sectoral Comparisons

When compared to other processing industries in the province, the position of the fishery seems to be even more precarious. With 15.8 percent of all hours worked in the manufacturing sector, fish processing provides only 9.8 percent of the salaries and 6.7 percent of the added value (see table 6.6). Although the average salary in this sector is 40 percent lower than for the overall manufacturing activities of the province, labour costs weigh a lot more: salaries paid to production workers account for 18.3 percent of the sales in this industry, versus only 11.4 percent for all manufacturing activities. The relative weakness of shipments, together with proportionally higher costs for raw materials, are responsible for the fish processing sector's lower productivity.

Comparisons of productivity indicators are fairly eloquent: the average hourly productivity is $11.43 in the fish processing sector versus $26.82 in the manufacturing sector as a whole! Consequently, the profit margin is much lower in the fish processing sector. In fact, it is 30 percent lower than that observed for all manufacturing activities.

It is tempting to believe that some high performance industries (i.e. pulp and paper, beverage, metal products) are overshadowing the importance of the fish processing sector relative to the overall manufacturing sector. However, a brief review of each activity sector will confirm the still precarious position of the fishery.

Indicators given in table 6.7 show that, even when compared to weaker sectors, the performance of the fish processing sector appears to be clearly lower. For example, indicators for other food industries compare favourably with those for fish processing. The same goes for the lumber industry, where indicators on salaries, sales, productivity and profit margin are all considerably higher than in the fishing sector.

Table 6.6
Some Characteristics of the Fish Processing Sector Versus the Manufacturing Industry as a Whole
(Production sector only, New Brunswick, 1985)

	Fish processing	Manufacturing industries	Fishery/ Manufacturing
Number of establishments	70	665	10.5 %
Number of workers	3,577	22,167	16.1
Man-hours ('000)	7,322	46,340	15.8
Salaries ('000$)	47,207	482,870	9.8
Average salary/worker ($)	13,197	21,783	60.6
Value of shipments ('000$)	258,560	4,243,042	6.1
Added value/worker ($)	23,393	56,061	41.7
Hourly productivity ($)	11,43	26,82	42.6
Overall productivity index	1,77	2,57	68.9
Gross margin	33,497	794,060	4.2
Gross margin/shipments	13,0	18,7	69.5

SOURCE: Compiled from Statistics Canada data *Selected Principal Statistics on Manufacturing Activity of the Leading Industries - 1985*, cat. 32-250.

This poor performance of the fish processing industry in New Brunswick does not necessarily mean that it is not competitive, nor profitable. Some processing activities demonstrate a strong export competitiveness, while maintaining respectable profit margins. But generally speaking, the weight of production costs, especially for raw materials, greatly reduce fish processors' profit margins. Considering its production, the fish processing industry uses a lot of workers, which does not help in restoring its productivity to satisfactory levels. In order to improve the performance of this industry, more investments will have to be made in modern technologies, and measures will have to be taken to reduce seasonal fluctuations in supplies.

Table 6.7

Some Characteristics by Manufacturing Sector

(New Brunswick - 1985)

Industry	Proportion of jobs	Average salary	Proportion of shipments	Added value per job	Overall productivity	GM/ Sales
Food	31.5 %	15,573$	21.1 %	48,171 $	3,09	25.1 %
-Fish	16.1	13,197	6.1	23,393	1,77	13.0
-Other[1]	16.0	17,356	15.0	71,296	4,11	30.0
Beverage[2]	2.7	27,785	3.7	118,266	4,26	34.8
Lumber and furniture[3]	15.9	18,005	8.5	37,164	2,06	18.7
Pulp and paper	19.5	34,706	22.6	73,577	2,12	18.5
Other[4]	30.5	21,384	44.1	57,348	2,68	14.5
Total	100.0	21,783$	100.0	56,061$	2,57	18.7

1 Fruits and vegetables, milk and dairy products, meat and poultry, feed, bread and pastry, sugar and candy, and other food industries.

2 Soft drinks, distillation and alcoholic products.

3 Sawmills, planing shops, doors and windows, furniture and furnishings, and other wood products.

4 Printing and publishing, metal products, machinery and equipment, etc.

SOURCE: Compiled from Statistics Canada Data, cat. 32-250.

NOTES TO CHAPTER SIX

1. Kirby report, table 5.9, p. 91.

2. National Sea Products and H.B! Nickerson and Sons from nova Scotia; Fishery Products Ltd. and The Lake Group from Newfoundland; and Connors Bros. from New Brunswick. Out of the 93 plants in the sample, 51 belonged to one of these five companies. Except for Connors Bros., whose fishing activities are relatively limited and specialized, these highly vertically integrated companies operated most of the Atlantic offshore fleet. In 1981, National Sea Products had sales greatly in excess of the total sales of fishery products in New Brunswick: $314 million versus 240. Of the 14 New Brunswick companies included in the sample, 3 were from the southwest, and 11 from the northeast and the southeast.

3. Kirby report, p. 108.

4. Kirby report, table 5.30, p. 113.

5. Kirby report, p. 114.

6. Kirby report, p. 109.

7. The Kirby report itself mentioned these pressures made on the federal government, particularly by some multinational companies who, encouraged by the Newfoundland and Nova Scotia provincial governments, heavily demanded federal assistance to be able to expand their plants and fleets following the declaration of the 200 mile economic zone. The federal government's reluctance was such that two big companies — Nickerson and National Sea — went public to advertise their support for the fleet expansion. Aware of their political clout, considering their social importance, these large companies succeeded in getting their way with the federal government, judging from the major restructuring that followed and which was largely in their favour.

CHAPTER SEVEN

MARKETING: EVOLUTION AND OUTLOOK

Fish Processing: A Largely Export-oriented Industry

New Brunswick's fishery and seafood exports reached $352 million in 1987, which corresponded to approximately 12 percent of all products shipped outside the province. In comparison, metal exports were worth $118 million, lumber $111 million, fruits and vegetables $54 million, and electric power to the United States $279 million. In terms of contribution to the gross domestic product, the marketing of fishery products represented an important facet of the province's economy. Within the Atlantic region, New Brunswick still ranked third as fish exporter, with 18 percent of the exports, remaining behind Nova Scotia (38 percent) and Newfoundland (32 percent), but staying way ahead of Quebec (8 percent) and Prince Edward Island (4 percent).

The fish processing sector is heavily dependent on export markets, as are the other goods producing industries in the province. However, this dependency varies from year to year. For example, from 1980 to 1986, the portion of the exported production varied from a low of 58.6 percent to a high of 89.4 percent, for an average of approximately 73 percent. Although this dependency has grown stronger in the last few years, it remains lower than in Newfoundland and Nova Scotia where 85 to 90 percent of products are sold on external markets.

Exports have generally been firm in New Brunswick in the last few years. The value of exported fishery products has increased by 173 percent between 1980 and 1987 in spite of the recession which severely affected all activity sectors in the early 80s (see table 7.1).

Table 7.1

Production and Export of Fishery Products, NB

	Production				Exports				
Year	Q (T)	Var (%)	V (M$)	Var (%)	Q (T)	Var (%)	V (M$)	Var (%)	Value of exported production(
1980	96,819		220,5		51,808		129,3		58.6
1981	96,879	0.1	239,9	8.8	66,303	28.0	155,4	20.3	64.8
1982	87,360	-9.8	288,9	20.4	69,894	5.4	202,5	30.3	70.1
1983	80,556	-7.8	316,3	9.5	58,012	-17.0	203,4	0.4	64.3
1984	88,144	9.4	293,4	-7.2	62,581	7.9	212,8	4.6	72.5
1985	96,694	9.7	314,5	7.2	76,299	21.9	260,2	22.2	82.7
1986			343,7	9.3	78,290	2.6	307,2	18.1	89.4
1987			na		80,900	3.3	352,4	14.7	

SOURCE: Fisheries and Aquaculture, Fredericton. Data on 1986 production are based on preliminary statistics established by Fisheries and Oceans. For 1987, not even an estimate is available.

For the provincial economy as a whole, exports increased by only 29 percent during this period, thus raising the contribution of fishery products from 5.7 percent in 1980 to 11.9 percent in 1987. This performance on external markets is higher than that of the Canadian fishing industry as a whole, whose average increased by 15 percent per year between 1980 and 1987, compared to 23 percent for New Brunswick.

Such vigorous exports are largely reflected by a strong although unstable progression of the quantities exported: from 51,800 metric tonnes in 1980 to 80,900 in 1987, for an increase of 56 percent. In comparison, fishery landings in the province rose by 41 percent during the same period.

Of course, not all species contributed equally to this performance on external markets. For many, the increase in exported volume weighed more heavily than the rise in prices; for others, the opposite occurred, with the increase in exported value being mainly the result of rising prices. Both factors, price and quantity, may also have played a part in increasing or decreasing the exported value.

As for all products taken together, one can easily conclude that our performance on external markets was maintained thanks to an everincreasing supply. In fact, increased supplies were responsible for 75 percent of the actual rise in exported value. It is believed that higher prices accounted for 15 percent, while 10 percent of the exported value resulted from changes in the types of products offered. For example, the move from lower unit value products to higher value products (such as fresh lobster meat at the expense of frozen lobster in-the-shell, or herring roe versus frozen herring fillets) helped to increase the final sales value. To better understand the impact of these factors on the level of fishery products exported, we have compared, for the main products sold outside, the difference between the exported quantity and the actual exported value of each of these products. We also calculated the actual change in the average export price for each product, so as to better demonstrate the importance of prices in the evolution of the final exported value. The two years compared were 1980 and 1987, which provides a sufficiently long observation period while avoiding the top and bottom ends of the cycle (see table 7.2)

Table 7.2

Evolution of Fishery Product Exports, New Brunswick

(Comparisons 1980-1987)

	Change in exported quantity	Change in actual average price	Change in actual exported value
Herring products	34 %	-12.6 %	17 %
-Roe	2023	-8.0	1851
-Canned	73	-28.3	24
Cod products	51	25.8	89
-Frozen fillets	96	39.6	174
-Frozen blocks	-6	4.9	1
-Fresh fillets	718	15.2	1329
Redfish	-10	6.1	-2
Sole	-48	18.5	-38
Haddock	86	14.1	112
Crab products*	442	-10.0	388
Lobster products	124	-1.5	121
-Live**	102	6.1	114
-Frozen meat	125	-2.6	119
-In-the-shell(frozen)	-37	-16.6	-48
-Fresh meat	2239	-1.2	2216
-Canned	-47	-14.0	-55
Fresh scallops	0	-6.7	-7
Clams			
-Fresh or frozen	153	-10.1	151
Shrimps			
-Fresh or frozen	-55	27.7	-42
All exported products	56	12.1	75

* Excluding canned crab.

** Comparisons for 1981-1987.

All in all, it appears that prices have not contributed much to the rise in exports, in terms of actual value, since the early 80s. This is clear in the case of herring products where the exported volume increased by 34 percent but where the actual value only rose by 17 percent, due to a substantial decrease in the average actual export prices (-12.6 percent). Between 1980 and 1987, herring exports greatly increased from 32,000 to 40,000 metric tonnes. Products involved in this increase were whole, fresh and frozen herring (shipped mostly to New England for second-stage processing), canned sardines and herring, dried and smoked herring, and of course herring roe. However, frozen herring exports dramatically decreased, from 9,400 to 2,600 tonnes following the loss of the European market.

Groundfish, although representing only one sixth of our exports in terms of value in 1980, greatly helped in maintaining the actual value of our exported products. Its good performance can be explained first by a large increase in exported quantities in spite of lower landings (see chapter 6), as well as by a strong progression of prices for exported fresh and frozen fillets, especially in recent years. Among the main exports, groundfish products increased the most, overall, in terms of export value. In relation to all exported fishery products, groundfish increased its share from 16 percent to 18 percent, as shown in table 7.3.

Table 7.3

Exports by Species, New Brunswick - 1987

	Value	Proportion of exports 1987	1980
SHELLFISH Lobster (60 %), Crab(31 %) Clams, Shrimps, Scallops (9 %)	194,676,400 $	56 %	44 %
PELAGIC AND ESTUARINE Herring (41 %), Sardine (40 %) Salmon (7 %)	94,212,000 $	26 %	40 %
GROUNDFISH Cod (67 %), Flatfish (6 %) Haddock, Pollock, Redfish (10%)	63,523,600 $	18 %	16 %
TOTAL EXPORTS	352,412,000 $	100 %	100 %

SOURCE: Compiled from Statistics Canada data, International Trade Division, *Domestic Exports Laden in New Brunswick by Export Commodity Classification and Country of Destination*, Ottawa, 1987.

With respect to shellfish, export levels greatly fluctuated according to the species captured. The growth in lobster exports was very strong, from 3,400 to 7,600 tonnes between 1980 and 1987, which more than doubled this species' contribution to the total exported volume. This performance was supported by a progressive increase in landings, not only in New Brunswick but elsewhere in the Maritimes, thus making it easier for our processors to get supplies from outside the province. Prices for lobster products, in actual terms, did not follow this upward movement of quantities offered. Had it not been for the vitality of prices for live lobster, whose exported volume more than doubled, the performance of lobster products in terms of actual exported value would probably have been more modest.

Scallop exports increased in volume during this period, only to return to their 1980 level. In spite of firm prices, shrimp exports decreased, while fresh and frozen clam export markets were maintained thanks to an increase in the sales volume. However, the species which departed the most from the general trend in shellfish exports is snow crab. Exports of shellfish rose sharply until 1982 (a record year for landed volume in New Brunswick), but then dropped slightly in 1983, and rose again until 1985, peaking at 9,600 tonnes in 1987. Despite recent increases, average actual (real) prices for crab are now lower than in the early 80s. Increasing quantities of crab in sections, at the expense of crab meat, have had a negative impact on this species' contribution in terms of revenues, and consequently on the average actual price per unit of weight. It may be more profitable to sell 1 kg of crab in the form of sections rather than shelled meat, even if this latter product has a much greater value.

The growth of the American and Japanese markets has undoubtedly contributed to the recent expansion of the fishery not only in New Brunswick but also elsewhere in Canada. To give an idea of how much these two large markets have grown, let's take the fish consumption per capita in the United States which rose from 5.2 kg in 1970 to 6.7 kg in 1987, thus resulting in a present consumption of at least 500,000 tonnes higher than in 1970. This additional consumption is equivalent to more than five times the production of New Brunswick. And what about the Japanese market, which has by far the highest per capita fish consumption of all industrialized countries and whose growth has even been more dramatical than in the United States?

Finally, let's mention that in the case of New Brunswick, the wide variety of species captured, the importing of raw materials (lobster, herring, tuna), and the recent growth of salmon breeding have helped to maintain our exports in the last few years.

Structure of Exports in 1987

Now that exporting trends are better understood in terms of quantities offered and prices paid, let's review the relative importance of each one of these products, as well as their main export markets. As regards the most lucrative group of products, it is shellfish that generated the most export revenues, and by far (see table 7.3).

Two species with a high commercial value, i.e. lobster and crab, accounted for half of the total exports or for more than 90 percent of the shellfish exports. With respect to pelagic and estuarine species, the second most important group, the largest exports are the result of three products: herring roe, processed herring (pickled, smoked), and canned sardines; the other species were cultivated salmon, alewife and smelts. The production of canned tuna, discontinued in the fall of 1985 due to quality problems, is usually sold domestically. As for groundfish, their contribution to provincial exports can be considered as minimal, representing less than one fifth of the total value of marine products shipped outside the country. As seen earlier, however, the groundfish sector has grown faster than the pelagic sector in terms of exported value in recent years. In 1980, approximately $21M in groundfish products were exported compared to $63M in 1987, for an increase of 200 percent. This performance is close to that of shellfish, which also grew very rapidly (242 percent). These percentages are much higher than for pelagic and estuarine products whose exports grew by about 80 percent during the same period. There is however one area that became extremely important, namely herring roe whose exports rose from less than $1M to $30M between 1980 and 1987. In spite of these new markets for herring, the contribution of pelagic species to provincial fishery exports decreased from 40 percent to 26 percent during this period.

As already seen, the variety of fishery products exported by New Brunswick is extensive. The fact is that from thirty or so species available, our processors produce close to a hundred different products, of which 24 come from only two species (herring and cod). However, this diversified production is but apparent since only 16 products (8 species), out of 97, account for at least 1 percent of the total exported value and contribute for 88 percent of the total exports. Their respective contribution is summarized in the following table, as well as their main markets, for 1987.

Markets

Fishery products exported from New Brunswick are for the most part shipped to only two countries: United States (61 percent) and Japan (21 percent). Our dependency on the American market is strong, although not as high as our neighbouring provinces'. In 1986, Newfoundland exported 76 percent of its marine products to the United States, Nova Scotia 73 percent, and Prince Edward Island 70 percent.

Table 7.4

Fishery Products Exported by New Brunswick, 1987

($M)

Rank	Product	Value	Percentage of total	Main markets
1	Crab, fresh and frozen	59,4 $	16.9 %	Jap (64 %) USA (34 %)
2	Lobster, frozen meat	52,5	15.0	USA (93) EEC (4) Jap (3)
3	Lobster, live	40,1	11.4	USA (86) EEC (12) Jap (2)
4	Canned fish (sardine)	38,4	11.0	Car (37) USA (32) Asia (17)
5	Herring, roe	29,9	8.5	Jap (100)
6	Cod, frozen fillets	14,5	4.1	USA (100)
7	Lobster, cooked and in-the-shell	13,7	3.9	ECC (54) Jap (25) USA (21)
8	Cod, blocks and fishsticks	12,5	3.5	USA (98) RU (2)
9	Lobster, refrigerated meat	9,3	2.7	USA (99)
10	Cod, fresh fillets	8,9	2.5	USA (100)
11	Clams, fresh or frozen	8,3	2.4	USA (95) Jap (4)
12	Atl. salmon, whole, fresh	6,3	1.8	USA (100)
13	Herring, bloated	4,9	1.4	Car (97) USA (3)
14	Shrimps, fresh or frozen	4,8	1.4	EEC (65) USA (26)
15	Scallops, fresh	4,1	1.2	USA (100)
16	Herring, processed fillets	3,9	1.1	USA (100)
Total - 16 main products		311,5 $	88.4 %	USA (60) Jap (24) Car (6) EEC (6) Others (4)
Other products		40,9	11.6	
TOTAL EXPORTS		352,4 $	100.0 %	USA (61) Jap (21) EEC(7) Car (7) Others (4)

SOURCE: Statistics Canada, International Trade Division, *Domestic Exports Laden in New Brunswick by Export Commodity Classification and Country of Destination*, Ottawa, 1987.

In spite of such concentrated exports, it remains that $60 million were generated by marine products of all kinds shipped in about fifty other countries. These markets are specific and offer various opportunities for the sale of our fishery products. These main markets are listed in table 7.5 below.

Table 7.5

Main Markets for New Brunswick Fishery Products

1980 and 1987

Country	Exported Value 1987	Percentage of exports 1987	Percentage of exports 1980	Average price per exported unit($/kg) 1987	Average price per exported unit($/kg) 1980
United-States	216,570,403 $	61.5 %	62.7 %	4,33	2,82
Japan	75,142,126	21.3	4.7	9,06	2,13
Western Europe	24,714,444	7.0	18.5	4,64	2,03
Caribbeans	23,625,289	6.7	8.6	2,02	2,39
South Pacific Islands	5,011,569	1.4	3.6	4,24	3,51
South America	3,358,507	1.0	0.6	2,28	2,51
Africa	1,544,289	0.4	0.6	2,51	2,42
Other	2,445,200	0.7	0.7	3,52	0,47
All countries	352,411,830	100.0	100.0	4,36	2,49

Our main market, the United States, is generally stable and fairly well balanced insofar as the exported volume/value ratio is concerned. The average unit price obtained for products exported to that market is $4.33/kg, which is slightly lower than that obtained on the whole ($4.36/kg). The range of marine products shipped to the United States is obviously extensive. They are, in order of importance: lobster, especially meat and live products ($98M); groundfish fillets, fresh and frozen, as well as frozen blocks ($32M); crab, fresh and frozen ($20M); canned fish, mainly sardines ($12M); fresh whole herring and processed fillets ($8M); fresh and frozen clams ($8M), cultivated salmon ($6M); scallops ($5M). These products represented close to 90 percent of the total value of fishery products shipped to our main client.

Although the United States buy most of our products, it is Japan that constitutes the most lucrative market. Indeed, 10 percent of our volume was shipped to Japan in 1987, for 21 percent of the total value of our exported marine products. That country imports mainly crab and lobster and represents our only market for herring roe (eggs). These high commercial value products greatly raise the average unit exporting price, which reached $9.06/kg in 1987. Japan thus saw its share of New Brunswick exports climb from 4.7 percent to 21.3 percent in the space of a few years, as shown in table 7.5.

At the other extreme, the Caribbean market presents a very different scenario: 15 percent of our volume is shipped to this region, but these products represent only 7 percent of our sales. With an average unit importing price of only $2.02/kg (below that of 1980), this market is certainly not considered as lucrative, especially since these countries are characterized by high economic and political instability. Among the 22 countries that purchased for more than one million dollars worth of New Brunswick fishery products in 1987, only two had an average importing price of less than $2.00/kg: Haiti ($1.15) and the Dominican Republic ($1.81). Two other important Caribbean markets had an importing price lower than $3.00/kg: Jamaica ($2.37) and Trinity/Tobago ($2.97). Our penetration into these traditional markets has nevertheless been very satisfying in the 80s. Indeed, after having almost doubled (from 11.1 to $21.5M) between 1980 and 1987, our exports greatly fluctuated afterwards but finally stabilized at about $24M in 1986 and 1987. It should be mentioned that this market is crucial for the southeast of the province which produces almost all of the processed fish (salted, dried, smoked and pickled).

As for the European market, it is very fragmented as a result, mostly, of the many countries involved. For New Brunswick producers, this market practically fell apart during the economic crisis of the early 80s when exports to these countries fell from $24M to $8M between 1980 and 1983. Only the United Kingdom increased its imports from New Brunswick during this period (from 3 to $6M), although not for long, as it cut its purchases by more than half afterwards. The biggest disappointment is West Germany which reduced its imports from $10.4M in 1980 to $1.1M in 1983. Following the depletion of the North Sea stocks, that country imported mainly frozen herring from New Brunswick for second-stage processing. For reasons that will be discussed later, we were ousted out of the European frozen herring market, without ever being able to recover it. With sales of $3.2M in 1987, we are far from the level reached in the early 80s. Exports to West Germany slightly picked up when European countries recovered from the 1981-82 economic crisis. However, we lost a lot of ground on this market which now imports only 7 percent of our fishery products compared to 18.5 percent in 1980. That is unfortunate since this market is considered to be very lucrative. Among the countries which have a higher average unit price for imported products, there is naturally Japan, but also five European countries: Sweden ($9.44/kg), France ($7.88), Denmark ($6.90), Belgium-Luxembourg ($5.45), and Holland ($4.75). Remember that this average is only $4.33/kg for the United States.

As regards the other markets (South Pacific Islands, South America, Africa, Eastern Europe and Asian countries), they remain very secondary if not marginal. Together, they purchased for $12.4M worth of New Brunswick fishery products in 1987, which represents 5 percent of our exported quantities, but only 3.5 percent of the value. The average price of products exported to these countries varies greatly from one country to another, but is generally around $3.07/kg, or 30 percent less than for all our export markets. The main recipient countries, such as Australia, New Zealand, Thailand, Brazil and

Bolivia, have been importing almost exclusively canned products from New Brunswick, and especially sardines.

Commercial Outlook

This short review of the marketing of New Brunswick's fishery products shows how much our markets are both concentrated and diversified. And even on a single market, such as the United States, there is not just one market, but as many markets as there are different products offered. Considering that our plants sell about one hundred products in fifty different countries and that our processors are competing with a multitude of other producers (Canadian and foreign) who are often more affluent, one can easily imagine all the scope and complexity of marketing our fishery products. Although New Brunswick processors are for the most part small producers operating independently on international markets, they nevertheless succeed in capturing certain market segments (niches) by benefiting from an ever increasing international demand for fishery products.

Given the wide variety of New Brunswick's production, let's examine our commercial outlook in terms of the three main groups of products, i.e. groundfish, pelagics and shellfish.

Groundfish

New Brunswick groundfish processors export almost all their production. In 1987, the main species exported was cod: frozen, filleted, in blocks and fishsticks ($27M); fresh, whole and filleted ($11M); and salted ($1.2M).

Fresh and frozen cod was almost exclusively sold on the American market of New England, with the United Kingdom buying a small quantity (0.5M) of frozen blocks and fresh fillets. As for salted cod, 20 percent of our production was absorbed by the American market, and the rest was shipped to the Caribbeans and Portugal. Apart from cod, various groundfish species are processed in New Brunswick, with the most important in terms of contribution to exports being flatfish, haddock, pollock and redfish.

Even though Canada is the United States' largest supplier of groundfish, we must compete with Scandinavian producers (particularly Iceland) who still lead (prime quality products and constant supplies) in the area of frozen fillets. Atlantic producers are more specialized in medium quality products aimed at price sensitive market segments, that is those found between the prime quality products offered by the Scandinavians and the lower quality products and species provided by Argentine (hake) and South Korea (Pacific cod). In the Canadian dominated market segments, buyers want standard products and are not interested in paying more for better quality products. Mainly concerned with prices, they prefer good quality, "economical" products. As for fresh groundfish, the Americans supply their own domestic market, although Atlantic producers (mostly from Nova Scotia) are also approached to complement their limited supplies.

The American groundfish market has been very firm in the last few years (since 1985), and Atlantic producers have been able to benefit from this demand, especially in the case of cod blocks. However, in the fall of 1987, prices started to stagnate, both at the wholesale and retail levels. The price for a block of cod on Boston's wholesale market rose from $1.32 US per pound in January 1986 to $2.00 US in September 1987, for an increase of 52 percent in less than two years. Prices for cod fillets escalated even faster: from $1.50 US per pound in January 1986 to $2.39 US in February 1987, for a 59 percent increase in the space of one year. In the fall of 1987, Canadian and Scandinavian cod exporters showed some scepticism about the ability to keep prices at these levels. Since then, groundfish supplies have been sufficient to fill the demand, and excess inventories have been even higher than normal on the American market (14,500 t in April, 1988). This saturation of the groundfish demand has sent prices tumbling down at the start of 1988, thus plunging processors and fishermen in turmoil. That is a sure sign that the consumer is strongly opposed to paying more for a product which, after all, is subject to the same law of substitution as other food products (beef, pork, and poultry). It so happens also that among complementary products, there are other lower quality groundfish species (Pacific cod, South Atlantic hake (whiting), Alaska pollock, and New Zealand orange roughy) which are increasingly benefiting from promotional activities aimed at replacing the traditional groundfish products that have become very expensive. Finally, let's mention that the recent months' increase in the Canadian dollar relative to the US currency could have accelerated the downward trend of the demand.

In this commercial arena, New Brunswick is a very marginal player. First, our portion of the Atlantic groundfish landings does not exceed 3 percent; second, none of our businesses are exclusively dedicated to the processing of this product, and they are all little integrated cmpared to National Sea Products (NSP) and Fishery Products International (FPI), their main Canadian competitors. Our processors sell their production on the American market through brokers who not only sell fish but also various other food products to the same buyers, thus enabling them to cut distribution costs.

On the other hand, NSP and FPI are both multinationals who rank among the largest fish processing companies in the world. They are highly vertically integrated (i.e. they handle their own harvesting, processing and marketing activities), and they own processing plants (subsidiaries) and sales offices in the United States and elsewhere. They are thus able to bypass certain tariff constraints, as well as certain United States provisions aimed at encouraging the purchase of American processed products, such as for catering to cafeterias in government establishments, the Armed Forces and schools. These companies have also implemented onboard packing techniques, which improve product quality and are already widely used in northern Europe. NSP bought a factory trawler in 1986, and expects to increase its offshore fleet from 60 to 68 boats, in addition to having containers installed on ten or so of its trawlers. These new technologies should enable these companies to sufficiently improve the quality of their products in order to compete with Scandinavian countries on the American market for choice products (prime quality frozen fillets and ready-to-serve meals). And above all, since the 1983 restructuring, these two companies have benefited from preferential access to northern groundfish stocks (more than 80 percent of offshore quotas), and are thus assured of year-round supplies, as are Scandinavian countries.

For a better penetration of the top-end market, either in the United States or elsewhere, some specific criteria must be met, namely a high and homogeneous quality, steady supplies, well orchestrated and on-going advertising, and finally stable production costs in order to be able to go through the downward cycles of the market without jeopardizing the business' stability. To meet such criteria, it seems necessary to have a potential scale economy, vertically integrated operations and, most of all, good access to fish stocks (all year-round). The only two companies in the Atlantic region that have such prerequisites are, as we have seen, NSP and FPI. In fact, this latter company has already made some progress on international markets, particularly in Japan where it has just introduced 11 new cod and flatfish based ready-to-serve meals. After all, FPI is not without experience in this regard as one quater of its sales, estimated at $400 million, come from highly processed products. Many of these products are processed in its Maine subsidiary, thus bypassing American tariffs. Far from being satisfied with these advances, FPI's management have expressed their intention to process themselves all their cod blocks into refined products within 5 years.

To conclude on the prospects of the American market, let's say that until now tariffs charged on products that are heavily processed have, to a certain extent, forced our producers to export raw products or products that are little processed (frozen blocks and fillets). These products, especially blocks, are shipped to American plants where they undergo more processing and greatly increase in value. In addition to being affected by American laws favouring the purchase of domestic products, exports of fresh or frozen fillets are subject to a levy of 6.2 cents per kilogram. Although such a low tariff is not liable to hinder fish trading with our American partner, it has nevertheless resulted in losses of some hundred thousand dollars for New Brunswick groundfish processors in 1987. Much higher tariffs are also applied to other products such as fishsticks or breaded or battered fish products (10 to 15 percent), and ready-to-serve meals (6 to 10 percent depending on the process). As for frozen blocks, they are exempt from all export tariffs.

American protectionism has recently become even stronger following complaints from American fishing companies who claim that their Canadian competitors have unfair advantages due to the many existing federal and provincial aid programs. Such actions obviously have a negative effect on the Atlantic groundfish industry which has been hit by further protectionist measures limiting still more its access to the American market (on salted fish in 1985), as well as by a compensating "ad valorem" levy of 5.82 percent in 1986 on whole and fresh groundfish from the Atlantic. Other more punitive measures were considered, but extremely favourable market conditions have undoubtedly restricted their escalation.

As for the European groundfish market, it does not hold too much interest for New Brunswick producers for the simple reason that almost nothing is exported to Europe, except for small quantities of cod to England and Portugal. But it does have great potential considering its large population basin, its high per capita income level and its high per capita fish consumption. Canadian groundfish exports to Europe are hampered by various restraints such as tariffs and quotas. In addition, Canada is at a disadvantage on this market because Scandinavian producers enjoy preferential tariffs on certain products.

With respect to the Japanese market, another promising potential, it is hardly accessible to Atlantic groundfish producers because of prohibitive tariffs and quotas. For example, quotas are established not according to the volume sold, but according to the imported value. Another reason, perhaps the most important, is that the Japanese have up to now favoured groundfish species which are less in demand, and therefore less expensive, and more widespread. FPI's attempts at penetrating this market are thus extremely bold. It is hoped that such initiatives will open up the way to other processors from Atlantic Canada, and especially from New Brunswick.

Pelagics

Unlike the groundfish markets, those for pelagic species in New Brunswick are numerous and diversified, although much more unstable. We saw at the beginning of this chapter that herring, in all its forms, accounted for 80 percent of the province's pelagic exports in 1987, which reached $94M. Herring from New Brunswick is sold just about everywhere in the world: frozen (whole and filleted), it is shipped to the United Kingdom, West Germany, Holland, Japan, the Caribbeans, and the United States; whole and fresh, it is almost exclusively sent to Maine plants, where raw products are in constant need; canned, it is shipped to thirty or so countries, among which are the Caribbeans, the United States, Australia, New Zealand, and Thailand; processed (salted, dried, seasoned, bloated or pickled), it is mainly exported to the Caribbeans, the United States, Greece, West Germany and the USSR. As for herring roe, our total production is absorbed by the Japanese market.

On the American and Caribbean markets, our producers must compete with European countries, including Norway, Denmark, Holland and West Germany. These producers, particularly Germany, have greatly relied on eastern Canada's herring stocks after the depletion of this resource in the North Sea in the late 70s. Our producers were thus able to enter a market which until then had been inaccessible to them and which moreover needed herring solely for human consumption. This led to a considerable increase in the value of herring whose processing usually consisted in oil and meal reduction. However, after massive restocking of the North Sea and the Baltic Sea, the traditional supply system was re-established within the EEC. This had two consequences for the New Brunswick herring industry: first, we lost practically all the European market (especially West Germany), and second, our producers were evicted by the traditional European suppliers (i.e. Denmark, Sweden, Holland) thanks to their strong competitive position. In addition to benefiting from easier access and lower transportation costs, these suppliers can offer good quality fresh fillets, compared to frozen Atlantic herring. Moreover, customs tariffs were sufficiently high to prevent imports from competing with domestic production. For example, whole and frozen autumn herring is subject to 15 percent tariffs. Similarly, the quota allocated to the most favoured nation is exempt from any customs levies, both on frozen and fresh herring. Tariffs set for other pelagic fish products vary from 10 to 25 percent. Finally, the EEC can also determine the minimum prices for imported products and offers preferential customs tariffs to Iceland, Norway, and the Faroe Islands, thus placing Canadian suppliers in the back seat. In the short and medium term, only a marked decrease in the North Sea stocks could give New Brunswick producers a chance to regain this market. It should also be added that the renewal of the North Sea stocks has enabled European producers to compete with Canada on the American and Caribbean markets. Even though these resources are important, our producers could still benefit from their containing more and more small sized herring. This partly explains the recent entry of Atlantic producers on Japan's whole and frozen herring markets, since our European competitors can't fill the demand for larger herring.

Another sector of the New Brunswick herring industry is that of canned sardines. Centered solely in the southwest, this sector exported $38M worth of products in 1987 to three regions: the Caribbeans (37 percent), the United States (32 percent), and the Southwest Pacific (Australia, New Zealand and Thailand) for the remainder. Our competitors on this market are the United States, Spain, Japan, Morocco, and Yugoslavia. However, Connors Brothers Ltd. is a leader in the herring canning sector, and succeeds in maintaining its position on the markets by selling its products under its own brand name. Prices for canned sardines are relatively stable, but remain low. This sector has nevertheless strenghtened its position on the markets and has even developed new ones. Exports of canned herring and sardines have increased, in volume, by 73 percent since 1980. However, the drop in average actual prices (-28 percent) has limited this sector's contribution to the overall exports (from 15 percent in 1980 to 11 percent in 1987). Connors Brothers' plans to automate all of its sardine canning plants will improve its productivity, as well as reduce its labour needs. Regarding trade activities with the United States, there are no real obstacles for fresh whole herring, which enters on this market free of tariffs, as is the case for salted herring in barrels. However, an 8 percent tariff is charged on canned herring in oil, as well as a 15 percent tariff on canned sardines in oil so as to limit Canadian exports of finished products.

Concerning herring processors from southeast New Brunswick, they mainly supply the traditional Caribbean market. They exported $5M worth of bloaters in 1987, and the prices charged on certain markets (Haiti and the Dominican Republic) have dropped by 10 to 15 percent. It is expected that exports of salted and pickled herring products will remain at their present levels in the United States, but will be reduced in Europe. The possibility of selling large quantities of low priced herring products in Eastern Europe could also be beneficial for our southeast producers. In 1987, Canada signed some agreements with Eastern countries, renewable annually, by which these countries accept, as a condition for having access to Canadian waters, to buy processed products from the Atlantic. The USSR has thus agreed to buy $12M worth of herring and macquerel in exchange for fish quantities above our fishing and processing capacity. On the other hand, in accordance to certain programs of the Canadian International Development Agency (CIDA), Atlantic processors also export canned herring and mackerel to some third-world countries. However, commercial sales on these markets are limited due to severe balance of payment and economic stability problems. Be that as it may, measures should be taken to ensure that our small processors have access to CIDA's programs.

The Japanese market for Atlantic herring roe has greatly expanded in the last few years. New Brunswick suppliers have gained from this new market with exports worth $30M in 1987, compared to less than 1 million in 1980. The Japanese are the only buyers of Atlantic herring roe and smelts. They also get supplies from Iceland and Norway, although for different markets. The Canadian Pacific coast also exports salmon roe products to Japan. In spite of these other suppliers, Atlantic herring roe is competitive on the Japanese market thanks to its distinctive characteristics which satisfy a specific demand. However, since 1987, the Japanese consumer's reaction to successive price increases has reversed this trend, and prices paid to Atlantic processors have dropped by 15 to 20 percent. It is unlikely that prices will return to their former levels since in the fall of 1988, Japanese buyers were very reluctant to pay such high prices. Fishermen and processors finally agreed on a price 30 percent lower than that offered the previous season, but counterbalanced by an additional premium based on the rate of roe (percentage of eggs in relation to the weight of herring). As for commercial regulations, Japan sets substantial tariffs (6 percent) on Canadian frozen herring and herring roe exports. In 1987-88, a higher quota (50,000 t) was negociated with this country for Atlantic herring, and it was then applied to Newfoundland smelts. These increased quotas resulted from insufficient supplies of large sized herring from European producers, eastern Canada's competitors on the Japanese market.

To sum up, let's say that New Brunswick's herring industry is confronted by sustained competition on export markets. With improved smoking methods and automated canning plants, we can however hope to maintain, if not strengthen our position on these markets. On the other hand, our low competitiveness in the frozen herring sector, and generally high operating costs in the processing sector are not conducive to eventual gains on international markets. Mackerel fishing, which should be complementary to herring fishing, is simply not competitive enough internationally, compared to its performance in countries where it is produced cheaply. This resource is not abundant along our coasts, and the volumes captured using present methods are not sufficient to make processing profitable, except for filling special food orders, such as those received from CIDA in aid of third-world countries. We are therefore reduced to using mackerel mainly as bait for the fishing industry instread of as food for human consumption.

We have already benefited from the depletion of the North Sea stocks and, afterwards, from the excessive Japanese craze for herring roe. However, this latter niche seems to have reached its limit as far as exports are concerned, judging from the recent attitude of buyers. Promising opportunities appear to be resurfacing with regard to fish meal. Markets for this product are expanding, and prices are attractive. It must now be determined if we should reorient our production towards this type of product considering the costly experience of the 70s.

A sector which could help New Brunswick's pelagic industry is salmon breeding. The prospects for this industry are discussed in various sections of this report. As for tuna, it has a very interesting potential although, for now, it is mainly aimed at the domestic market. In fact, it is protected against American canned tuna imports through special Canadian tariffs.

Shellfish

The marketing of seafood is certainly the most lucrative activity within the New Brunswick fishing industry. As we have seen earlier, this sub-sector has developed the most rapidly in the last few years: its contribution to overall exports increased from 44 to 56 percent between 1980 and 1987. Lobster accounted for 60 percent of the exports, and crab for approximately 30 percent. Clams, shrimps and scallops took up the rest, while oysters were sold on domestic markets. Let us now look at the factors which influence the marketing of these major products.

Lobster.

Lobster is probably the most widespread and stable resource, and one of the most lucrative of all species fished by New Brunswickers. Although landings go through periodic cycles, they have steadily increased: from 2,500 tonnes in the early 70s, to a little more than 4,000 tonnes at the turn of the 80s, and to over 7,000 tonnes in 1987. This steady growth has not prevented our processors from seeking supplies from outside the province in order to satisfy their need for raw materials. After all, the other provinces also fish lobster, and their catches exceed their processing capacity. Nova Scotia is first in Canadian lobster landings with 50 percent; next are Prince Edward Island (24 percent), New Brunswick (12 percent), Quebec (8 percent), and Newfoundland (6 percent).

Regarding the marketing of lobster, New Brunswick's competition is not so much at the market level as at the supply level. To satisfy the demand, processors in the southeast have to import large quantities of lobster from Prince Edward Island and Nova Scotia, thus filling from 50 to 70 percent of their needs in raw materials.

Lobster represented a third of our total fishery exports in 1987. Unlike its neighbouring provinces which export mainly live lobsters, New Brunswick's lobster sales are largely made up of extracted meat. In fact, 58 percent of our exported production consists in lobster meat, mostly frozen but also refrigerated. The American market absorbs 93 percent of our frozen meat exports and practically all of our refrigerated meat exports. Japan, Belgium-Luxembourg, and Sweden also buy frozen lobster meat from New Brunswick.

Live lobster is also in strong demand, not only on American and Canadian markets but also on several European markets (particularly France and West Germany), as well as in Japan. However, the American market accounts for 85 percent of our external live lobster sales. In fact, 55 percent of our production is sold live to the United States. Lobster from Nova Scotia, Quebec and Newfoundland is exported live to the United States in 95 percent of the cases. Cooked and frozen lobster in-the-shell is largely meant for European markets, in a proportion of more than 50 percent. France is by far the biggest client, followed by Belgium-Luxembourg and Sweden. The other large market for frozen lobster in-the-shell is Japan, with a quarter of our external sales in 1987. The remaining 20 percent is mostly exported to the United States. As for canned lobster, it represents only a small portion of our exports, with barely 1 percent.

In short, then, the American market absorbs more than 80 percent of our lobster exports. Demand is firm on this market, but since supplies are constantly increasing, prices are not rising much, except for live lobster for which the demand grows much more rapidly. American regulations concerning the size of lobsters could diminish our sales to the United States. It must be remembered that more than half of our exports on this market consist of live lobsters. However, due to our diversified markets and by-products, we are not as vulnerable as the other provinces in this regard. Moreover, approximately two thirds of the lobsters landed in New Brunswick are small, which makes them more suitable to processing. All our lobster products (except canned) are exempt from tariffs on the American market. On the other hand, European markets have high customs tariffs on imported shellfish from the Atlantic: 20 percent for canned lobster, 8 percent for live lobster, and 16 percent for frozen lobster. However, these tariffs do not seem to be prohibitive for New Brunswick producers, who exported for nearly $15M worth of lobster in Europe in 1987.

Crab

The snow crab industry has been through major ups and downs in the last few years, due to the severe fluctuation of stocks and changing demand. With respect to supplies, the primary and secondary sectors have been faced with a series of problems which starded in 1983 with the progressive decrease in stocks, and their near-collapse in the last three years. These problems were magnified by large increases in the harvesting and especially processing capabilities based on the trends observed in the early 80s when resources seemed to be expanding (New Brunswick catches doubled between 1980 and 1982, from 10,000 to 20,300 tonnes).

Another key factor for this industry is the development of the Japanese market, which rapidly turned to Atlantic crab following the depletion of Alaska's stocks, its traditional source of supply. The opening of the Japanese market, which proved very lucrative for our producers, did not however help to increase the importance of this sub-sector, mainly because the demand is almost exclusively oriented towards cooked and frozen crab sections. For example, our 1980 crab production was divided into three groups: canned crab (35 percent), crab sections (33 percent), and crab meat or shelled meat (32 percent), as shown in the table below.

Table 7.6
Snow Crab Production in New Brunswick
1980 and 1986

	Volume		Value	
	1980	1986	1980	1986
In-the-shell (sections & claws)	33 %	68 %	8 %	43 %
Shelled (fresh or frozen meat	32	31	36	53
Canned	35	1	56	4

In 1986, crab in-the-shell (sections and claws) represented 68 percent of the quantity processed in New Brunswick. This percentage would have been even higher had it not been for the government's intervention in favour of the industry to protect jobs. The temptation is high for processors: in 1980, the price of crab in-the-shell was equal to one fifth that of crab meat, whereas in 1986, it reached more than one third (37 percent) that offered for fresh or frozen meat. These changes in demand had other consequences, perhaps not as evident, but just as important for exports. Even though the price for crab sections increased rapidly, the export unit price did not rise as much because this raw product has less value than shelled meat per unit of weight. In fact, that is why, in spite of successive price increases for crab sections, the actual average export price was 10 percent lower in 1987 than in 1980 (see table 7.2). In 1980, one kilogram of exported crab was worth $8.56 compared to $12 in 1987. But in actual terms (i.e. in 1981 constant dollars), one kilogram of exported crab was worth 10 percent less in 1987 than in 1980. In addition to the decrease which is attributable to the CPI, one must consider the different nature of the product in 1987 (68 percent of crab in-the-shell) compared to 1980 (1/3 sections, 1/3 meat, and 1/3 canned). Table 7.6 shows that despite the growing importance of crab in-the-shell, it is crab meat that is the most profitable. That is, however, in terms of overall contribution to the industry. It is clear that for fishermen and processors the present orientation of production towards crab sections is considerably more lucrative. Processing of this product involves high costs, mainly due to the fact that the industry is very labour intensive. Therefore, crab meat is more profitable in absolute terms, but the benefits are divided among several groups and not only between fishermen and processors.

That having been said, let's evaluate the prospects that the marketing of crab holds for New Brunswick producers. The Japanese market alone absorbs two thirds of our exports, with the other third going to the United States. The Japanese market is more lucrative for New Brunswick fishermen and processors because it requires products that are very little processed, at attractive prices. Considering the degree of processing required, costs are therefore very limited compared to the usual processing involved in extracting the meat. On the other hand, given the rapid exhaustion of the resource, the industry is increasingly pressured to restrict exports of crab sections and promote higher processing of a resource that is getting scarcier every year. It should be noted however that, concerning the Japanese market, the demand is oriented towards crab sections. It's not that the Japanese are looking for a product that will lend itself to second-stage processing, since crab sections are sold as such in supermarkets and restaurants. The Japanese demand for sections is so strong that the price has more than doubled between 1987 and 1988; it had also increased considerably between 1986 and 1987. As for the American market, the price of frozen crab meat also increased in the last year, but by four or five times less than that for sections (25 percent versus 115 percent).

All in all, the crab marketing problem is mainly related to supplies. Considering the present production level, we are not able to completely satisfy the top end and very lucrative market segment of crab sections. The situation is very different in the case of lobster, for example, where the New Brunswick market segment for live lobsters can't absorb all the production, at least for now. The increase in the minimum size of lobsters and the favourable prospects of the European market could lead to greater fresh lobster sales. If such were the case, we could find ourselves in a similar situation as that for crab unless the lack of raw materials to be processed is compensated by the gradual increase of lobster stocks, which is far from guaranteed. Although there is room for other by-products in this sector, it is unlikely that crab's contribution to fishery exports will increase because of foreseeable saturated prices and stagnating stocks.

Other shellfish

Fluctuating demands and particularly supplies seem to be what characterizes the most the other marketed seafood species. Shrimp landings dropped from 3,000 to 1,300 tonnes between 1981 and 1984, and then rose back to 2,400 tonnes in 1987. Scallop catches went from 5,800 tonnes in 1981 to less than 3,000 tonnes in 1986 and 1987. As for oysters and clams, landings certainly do not reflect their commercial importance due to the "non-economic" nature of these species. With respect to exports, however, for which data are much more real, a marked progression is observed. For example, 1985 figures indicate a production of 995 tonnes of clam products in New Brunswick, whereas exports are close to 1,400 tonnes; and that is not including the domestic market. Shrimps and scallops are much more often mentioned in the various reports and studies on the New Brunswick fishery. It is true that these species have had better days and that they have given rise to major expectations in the industry. But during the last four years, New Brunswick producers have exported two and half times more clam products, in terms of value, than shrimps. In 1986, exports of clam products generated twice as much revenues as all of the scallop production (fresh and frozen) shipped outside the province ($12.2M versus 6.1). That same year, the value of exported clams equalled that of all fresh and frozen cod fillets. This little or badly known industry has grown steadily since 1981. Prices have certainly stimulated clam producers who saw the average value of their products climb from $4.82/kg in 1981 to $8.60/kg in 1986. Consequently, they expanded their production from 568 tonnes to more than 1,400 tonnes, thus increasing exports from $2.7M to $12.2M. That is quite a performance that deserves to be mentioned.

Similar comparisons can't be made for oysters because the production is sold domestically, which makes it difficult to get exact figures on sales. According to some observers, the production, which was estimated at 600 metric tonnes in 1986, could be twice as high as official figures indicate.

- As regards the marketing of scallops, the most important factor is the development of the Georges Bank. Since last year, for example, prices on the American market dropped by $2.00 US per pound, due to increased American landings. Competition could also come from across the Atlantic where scallop breeders (Norway, Iceland, Japan) are likely to enter on the American market, our only outlet for this product.

The situation is a little more complex with respect to shrimps, although more promising. First, Americans are very fond of shrimps, under all their forms; the American market is therefore in full expansion. The European market for cold water shrimps (those mainly fished by New Brunswickers) also seems to be getting stronger after a slight resistance to the high prices asked towards the end of 1986. Our shrimp exports on the European market are however subject to a 20 percent tariff. The smaller, and cheaper, warm water shrimp has increased its share of the American market in the last few years, but without hampering Canadian shrimp exports which are aimed at a specific market segment. The potential is therefore great for New Brunswick shrimps insofar as we can secure our share of the quotas.

Canadian Market

Although Canada has, since 1979, become the largest exporter of fishery products in the world, its domestic supplies are not sufficient to satisfy all the needs of Canadian consumers. As a result, we must import each year large quantities of fish (in excess of $600 million in 1986). These imports are justified, on the one hand, by the commercial agreements with other countries that buy Canadian products and, on the other hand, by the non-availability in Canada of certain products requested by Canadian consumers. Different prices within the various ranges of products offered by the numerous suppliers, both domestic and foreign, also provide Canadian consumers with the opportunity to purchase foreign products that are similar to those available locally but at a lower price, for example.

To summarize the situation, let's simply say that because of our geographic dimension and the market fragmentation that ensues, several products from species widely fished by Canadians are both largely exported and imported. Salmon is a good example of this.

In 1984, Canadian producers processed 46,000 tonnes of slamon products and by-products (thirty or so different products, in all). Of course, this production was much too large for the Canadian market which absorbed approximately 10,000 tonnes; the remainder (36,000 t) was shipped outside the country. That same year, Canada imported 15,000 tonnes of salmon products from all parts of the world in order to satisfy its domestic market. Thus, although Canada is a large producer and exporter of salmon, we bought from the outside one and a half times as much salmon as we sold on our own market. This example is also valid for a great many other fishery products.

In 1986, the domestic consumption of fish and seafood represented a market worth $1.1 billion. Almost half of the supplies (more than $500M) were provided by Canadian producers, and the remainder was imported. The domestic market holds various opportunities for New Brunswick fish and seafood producers who enjoy a favourable geographic position, compared to their competitors from the other Atlantic provinces and British Columbia. If fact, they are in a better position to serve the central Canada market, especially since their range of products is fairly extensive.

As for quantities of fishery products that New Brunswick ships domestically, they are difficult to evaluate precisely due to incomplete and unreliable data. A rough estimate can nevertheless be obtained by subtracting the value of exports from the production. Then, by removing from this difference the products imported by New Brunswick, we get an approximate idea of the value of our shipments on the domestic market. However, since we do not have an exact estimate of the amount of these external purchases, let's assume that they are minimal (less than 3 percent of the Canadian market, according to the 1979 input-output tables for the Canadian economy) taking into account the size of the domestic market and the ease with which New Brunswickers can buy a wide variety of local marine products, either from the processing plant, the corner fish store or the fisherman himself.

In 1986, the provincial fish and seafood production totalled $344M, and the exported value $307M, for a difference of $37M. Considering what has been said above, it can thus be assumed that sales of fishery products on the Canadian market (including New Brunswick) by New Brunswick producers were equal to $37M in 1986. This estimate of domestic sales is probably not exaggerated since, according to the 1979 input-output tables for the Canadian economy, New Brunswick sold on the domestic market the equivalent of 28 percent of its fishery product exports. By extrapolating for 1986, this would correspond to $86M for the Canadian market. It would be interesting to know where, on the domestic market, these products have been sold and what are the main products sold. It is known, for example, that the canned tuna production, which totalled $35M in 1985, was sold on the Canadian market. It is also known that around 50 percent of the cultivated salmon production is presently sold domestically. Similarly, the oyster and mussels production is mainly oriented towards central Canada. Several other products, in more or less limited quantities, are also shipped on domestic markets.

In spite of this potential, some companies find it particularly difficult to penetrate on the Canadian market. For example, the Coopérative des pêcheurs de l'Ile, in Lamèque, a most diversified company as far as products are concerned, makes only 5 percent of its sales (estimated at $25M per year) in Canada. This is not so much due to an insufficient demand on the part of central Canada, but to the absence of an internal distribution network for fishery products. The distribution network for New Brunswick producers is Boston. As well, a large part of central Canada's supplies come from Boston; and more often than not, the products bought were previously imported from the Atlantic provinces. Of course, all this increases the average price of products bought by central Canada consumers. Prices are higher than they ought to be because they include the fees (commissions) paid to all middlemen, in addition to transportation costs over greatly lenghtened distances. That is probably one of the reasons why central Canadians do not eat as much fishery products as they should, considering the closeness of a large fishing region such as the Atlantic.

Summary

We have seen that, in spite of all sorts of factors, often external, New Brunswick fish and seafood producers are selling their numerous products all over the world, and with a fair degree of success. The strong competition from many producing regions, the cyclic fluctuations of stocks which are as unpredictable as they are severe, the consumers' shims which cause important structural changes in demand, the increasing commercial protectionism of consumer countries, and the powerful lever of the exchange rate for the various monetary units involved in the commercial circuit of fishery products, all these are imponderable factors over which New Brunswick producers have no control. Consequently, they must constantly strive for their share of a demanding but promising world market.

Yet, our producers are the most vulnerable internally. One need only look, among other things, at the highly seasonal character of fishing, the excessive overcapacity of production units, the immoderate requirements of processors for resources that are becoming rarefied, the low integration of fishing companies, and the still labour intensive nature of production lines. No doubt that our producers must enjoy comparative advantages that are more than substantial to be able to overcome such obstacles and to break into international markets as they do. Without reducing in any way the marketing know-how and aggressiveness of our producers, it remains that their success is largely due to two factors: first, the rise in world demand for marine products, and second, the competitive position of the Canadian dollar in relation to its two major clients, i.e. the United States and Japan. From 1980 to 1986, the American dollar's value rose by 18.9 percent compared to ours, while the Japanese Yen saw its exchange rate climb 60 percent relative to our dollar. As we saw earlier, this greatly favoured imports by these two clients who, for many years, have enjoyed a higher purchasing power in Canada.

Although this trend seems to be holding with respect to the Japanese market (with the yen increasing by another 12.8 percent between March 1987 and March 1988), it has already reversed itself with respect to the American market (with the US dollar falling by 5.3 percent relative to our dollar during the same period). It therefore appears that the favourable position that New Brunswick producers have been enjoying for some time on the New

England market will weaken in the next few years due to the decreasing purchasing power of the American consumer, relatively to Canadian products. Even if it is true that the currencies of our main European competitors have also greatly increased with respect to the American dollar, these suppliers should not be as affected since they are mainly oriented towards the higher segment of the American market, which is more sensitive to quality than to prices. Already, the effects of the recent strenghtening of our currency relative to our neighbour's are being felt, especially in the groundfish industry.

The relative interplay of exchange rates is therefore double-edged for New Brunswick exporters of fishery products since they are encouraged to expand when rates are favourable, but are made more vulnerable when rates are not favourable. And as these periods do not necessarily coincide with resource cycles, they are sometimes not capable of fully benefiting from favourable periods; the opposite is just as true. In such a context, it is not surprising to see how much the cycles through which the Atlantic fishing industry goes through periodically are bad for long term stability. The logic is therefore clear: when unable to influence the rules of the game or to control any of these imponderable factors, each player within the industry must rapidly adjust to the changing circumstances affecting his specific sector. In short, everyone must remain competitive and ensure his own stability by resorting to sound management practices and moderate investments during low periods, with all the consequences that such rational behaviour may have on the fishery's socio-economic environment. To do otherwise would inevitably result in lower competitiveness and a weaker industry.

CHAPTER EIGHT

THE CONSULTATIONS

General Comments

In the course of preparing this report, we held interviews with a number of industry representatives and government officials. The interviews were wide-ranging and they gave us a full appreciation of how the problems of New Brunswick's fishing industry are perceived. We also consulted various briefs New Brunswickers have prepared in recent years on the fishery. We heard a number of suggestions on possible means of spurring new economic activity in the sector. We saw in everyone we met a deep commitment to the fishing industry and to their own region and communities.

We have already noted a number of the points that were made during the consultations. For example, there is a widely held view in the New Brunswick fishing industry that the province has been seriously short-changed in the allocation of groundfish quotas. This view is held by government officials, processors, fishermen and industry spokespersons. The 200 mile extension, we were told time and again, may well have benefited the Atlantic fishery generally but it had virtually no impact on the New Brunswick fishery. Moreover, the Kirby task force is widely perceived to have overlooked the New Brunswick fishery. In particular, the restructuring of the Atlantic fishery which followed the Kirby task force was roundly condemned. If anything, the argument goes, the restructuring placed New Brunswick fishery at a distinct disadvantage. As a result of the restructuring, the New

Brunswick fishing industry must compete with two major firms (i.e. National Sea and FPI) which were made strong through a special infusion of federal government funding. In contrast, New Brunswick fishing firms were left to fend off on their own as best they could. Yet, the problems facing the New Brunswick fishery were and are no less serious than anywhere else.

The problems confronting the fishery are well-known and it certainly did not take long for us to be fully aware of them. As we consulted with various representatives of the industry and government officials and in visiting the three regions of the province where the fishery is of great importance to the economy, it became obvious to us that there are three distinct fishery in the province each with its own sets of problems and development opportunities. Each of the three fishery have their own sets of circumstances and only rarely can one see that what is necessary in one region is also necessary in another. Even when one identifies one measure that should apply to all three regions, one often quickly discovers that the nature of the measure (i.e. research and development) should differ greatly from region to region in its application because the problems and opportunities that need to be addressed are so different. A brief survey of our consultations will make this clear.

The Southwest

In the Southwest, the industry applauds the free trade initiative with the United States. For example, since the early 1980s, with a weaker Canadian dollar, Connors Brothers have been aggressively seeking new marketing opportunities in the United States. They have been successful. Their market share of the United States market for sardines went from 7 percent in 1983 to 30 percent in 1988. Now, they would like to secure their new markets and consider the proposed Canada-U.S. free trade agreement as the surest way to do this. The agreement would eliminate over a ten-year period, all tarriffs on sardine and canned herring.

The herring fishery in the southwest is coming off a highly successful year in 1988. The only exception is the jolt in the Japanese market for frozen herring roe. The dramatic drop in price has affected the industry in the southwest as it has in the northeast. However, in the southwest, the resource was plentiful and the market for herring (i.e. juvenile) was strong. Industry and government officials also report that the outlook for resource availability looks promising even to the year 2000. Still, the industry has lived through booms and busts in the past and looks to the future with some uncertainty.

That said, the industry in the southwest region is, comparatively speaking, healthy, stable, and offers prospects for growth. In addition, the aquaculture industry is now firmly planted in the region and offers still more opportunities for growth.

The aquaculture industry in southwest New Brunswick is truly a success story. As noted earlier, the industry is booming with sales expected to top $40 million in 1988. If there were ever a case which demonstrates clearly the importance for the government and the private sector to work hand in hand to pursue successfully development opportunities, the aquaculture in southwest New Brunswick is one. The government provided the knowledge, the research and some financial assistance while the private sector provided the entrepreneurial spirit to start something new.

The growth in cage-grown Atlantic salmon has been phenomenal. So much so that the provincial declared a moratorium a few years so that everyone would have a chance to sit back and assess the industry's growth and chart its future. This initiative has been very well received in the region. Some have even expressed concern that in lifting the moratorium there is certain to be a "gold rush" mentality with a great number of people wishing to enter the industry.

This is a concern because uncontrolled growth could bring chaos not just to the aquaculture industry but to the traditional fishery as well. There are now 32 individuals or companies growing Atlantic salmon at marine cage sites and two growers of rainbow trout. There are two main sites for salmonid culture activity — one is the Lime Kiln Bay/Bach Bay/Bliss Harbour area and the other in the Deer Island, Grand Manan and Campobello area. The success of salmonid culture activities has led to an all-out search for marine grow-out sites and for freshwater commercial hatchery sites.

The rapid growth in the aquaculture industry is not, however, without cost. By using a scarce public resource — the inland waterways — aquaculture has a direct impact on the rights of other groups such as boaters and can even contribute towards the reduction of incomes of commercial fishermen. There is no assurance that workers in the traditional fishery will be the ones who will seize new employment opportunities in aquaculture.

Opposition to aquaculture can be expected from the commercial fisheries, which still represents a major source of employment and incomes for Atlantic Canada. Such opposition will likely increase, as aquaculture expand, and in expanding, dwarf the commercial catch of certain species. Internationally, cultivation of Atlantic salmon is forecast to expand so rapidly that by 1990 the commercial catch will account for less than 10 percent of the total supply. Within Canada, cultivated Atlantic salmon could equal the total Canadian catch in 1988; by contrast, it was only 5 percent of the commercial catch in 1982.

Opposition to salmonid culture in New Brunswick also comes from commercial fishermen concerned about herring weirs or the impact of aquaculture on fish prices. Sea cages can interfere with herring weirs, and conflicting claims may have to be settled on the basis of net benefits; which form of fishing generates more jobs, incomes and technological development. Concern over aquaculture's impact on fish prices may also be justified. The cultured product will increase total supply. The result, assuming stable demand, will be lower prices. If profits had already been eliminated from the fisheries, lower prices will force some fishermen to leave the industry. Over time, however, as fishing decreases, fish stocks can be replenished, and those fishermen who remain in the industry will enjoy higher catches. The net impact may therefore be more ambiguous than opponents suggest. Falling prices in some instances will be detrimental to the commercial fisheries initially, but long-run effects may be positive for those that remain in the industry.

What the above suggests is that governments must intensify their efforts to coordinate their activities in aquaculture. The role of governments, as past developments have shown, is essential in developing the aquaculture industry. Government support is crucial in the high-cost pre-production stage of research in genetics, disease control, feed development and facilities, in start-up assistance, and in selecting appropriate sites.

As the industry matures, it will become increasingly important for both the federal and provincial governments to clarify the roles in aquaculture. Industry representatives will urge both governments more and more to "get their act in order." Specifically, the industry will be asking for governments:

- to clarify and simplify the regulations governing all aspects of aquaculture
- to establish supportive legislation and to eliminate duplication between various statutes
- to encourage intergovernmental and intragovernmental coordination of efforts.

There is no doubt that New Brunswick's proposed aquaculture act is a step in the right direction. The proposed act will enable the provincial government to oversee site development and hatchery investments. In short, it will provide the government with the legislative tools to minimize conflict between open-sea and weir fishermen and the aquaculture operations.

The proposed act, however, does not in itself encourage intergovernment coordination efforts. The coordinating mechanism of the subsidiary agreement under ERDA is important but it is not sufficient to sort out the proper role of both governments in aquaculture. The ERDA subsidiary agreement lays down the groundwork for coordinating development efforts but not for regulating and policing new rules. It is suggested that the provincial Department of Fisheries and the federal Department of Fisheries and Oceans negotiate a Memorandum of Understanding on their respective roles in aquaculture to ensure an orderly management and expansion of the aquaculture industry.

There are other opportunities for development than aquaculture in the fishery in the southwest New Brunswick. The soft-shell clam is an important fishery resource employing close to 1,000 fishermen and plant workers. Reported clams landings have increased substantially in recent years (by 70 percent over the last five years). There is also a strong and growing market in the United States. The growth in sales has, however, increased harvesting pressure on available clam flats. This, together with pollution and habitat degradation, is having serious impact on the clam fishery. Our consultations reveal that the soft-clam resource is not being utilized, managed and developed in an orderly fashion and the full economic potential of the resource is not being realized.

It is important to define measures to increase the quantity of clam that can be harvested and thus increase the income of fishermen. To do this, governments will have to encourage research and development. Different methods of clam enhancement must be tested, the impact of various harvesting methods need to be assessed, and sources of pollution and other sources of habitat degradation need to be identified.

There are also eleven bloater operations in southwest New Brunswick. These operations are operating efficiently and are producing a quality product. In recent months, there have been strong indications that the eleven bloater operations are cooperating to a far greater extent than they have ever been in the past. Much like the bloater operations in southeast New Brunswick, what the bloater operations in the southwest require is assistance to identify new markets abroad. Individually, these entrepreneurs do not have the resources or the skills to explore new market opportunities. Collectively and with special government assistance, they stand an excellent chance of finding new market opportunities.

The Southeast

The fishery in the southeast is relatively stable. Lobster dominates the fishery in the region. For example, in 1987 the region saw $24 million in total landings. Lobster alone accounted for $18 million of these landings. In addition, lobster processing plants play a vital role in the economy in the region and dominate the fishery in the region to an extent not found anywhere else in Atlantic Canada. To recapitulate briefly: there are now 52 processing plants in the southeast and in 1987 they operated for a total of nearly 8,000 days or an average of 151 days in the year.

When viewed from an Atlantic Canada perspective as a whole, the outlook for lobster is for a generally stable resource. Fresh lobster will also continue to remain in strong demand. The United States is already the most important export market for the lobster fishery and, as a result, the proposed free trade agreement is not likely to have a large impact. In any event, tariffs have been only a minor impediment to trade for the region's shellfish.

Our consultations, however, reveal that all is not well with the southeast fishery. It is true that the region's lobster processing plants are for the most part well run and have an experienced work force. Traditionally, lobster processing plants have centered in southeast New Brunswick not simply because of proximity of the resource but also because the area's workforce has proven particularly well suited for the work. The potential problem, however, is on the resource side.

The processors expressed deep concern over the future availability of lobster. They explained that well over fifty percent of the resource comes from outside of the region. Lobsters are brought in from Prince Edward Island, Cape Breton and northern New Brunswick. Until recently, lobsters were also imported from Quebec; the provincial government, however, imposed restrictions on shipments of unprocessed resource to plants outside of the province.

Given new developments in Prince Edward Island and Cape Breton, the processors are now looking to the future with uncertainty. The Prince Edward Island government has recently enacted a policy which calls for fifty percent of the local resource to be processed on the Island. The P.E.I. government has also threatened to turn the policy into law if it is not respected.

In Cape Breton, generous federal government tax incentives and cash grants are encouraging the construction of new fish processing plants, including plants that can process lobster. In a recent provincial election, an opposition party pledged, if elected, to prohibit all export of unprocessed fish to plants located in other provinces. If processing plants in the southeast are no longer able to draw some of their resources from Prince Edward Island and Cape Breton, the impact will be far reaching. It will certainly no longer be possible to keep employment levels up to their current levels (i.e. over 3,500 people were employed in the plants in 1987). It will be important in future for the province to stress to neighbouring provinces the negative impact on the southeast New Brunswick economy if they put in place protectionist measures. There will, of course, be no net gain to the Maritime economy if both Prince Edward Island and Nova Scotia move to limit the flow of the lobster resource to processing plants in New Brunswick. Quite the opposite, for the region as a whole would lose. New capital spending, no doubt with government assistance, would finance duplicate plants which are not likely to have the experienced and quality workforce found in southeast New Brunswick to operate the plants. Accordingly, the provincial government should monitor very close any new developments in Prince Edward Island and Nova Scotia. There may well be a need at some point for the premier to raise the matter with his colleagues at the Council of Maritime Premiers.

In our consultations, we asked processors if they could identify new development opportunities. We discovered that there were no shortage of ideas. Some insisted that the industry should focus its efforts on increasing value added. One explained: "I make fifty cents on a can of lobster. If I could come up with a new product (i.e. low calorie meal or frozen dinner) in which I could split the can in three, then, very likely I could make $1,50 on the same can of lobster." Given the limited resource increase value added holds obvious positive implication for his plant and other lobster processing plants in the region. The president of National Sea, Gordon Cummings, revealed in our consultations that his firm pulled out of southeast New Brunswick precisely because there was so little value added to processed lobsters and so little prospects that there could be more in future.

Processors also noted that current research and development efforts and product development in the fishery are inadequate. They are correct. In fact, it is hardly possible to overstate the importance of research and development to the future not just to the southeast fishery but to the New Brunswick fishery as a whole. The president of National Sea, for instance, recently explained how the company turned its fortunes around. Instead of concentrating on the quantity of fish processed, he reported, the quality of fish was emphasized. They are numerous fish producers and processors in New Brunswick who still rely on quantity. They, however, do not have the resources of National Sea to launch research and development initiatives in the area of product enhancement and product development. The New Brunswick fishery, composed largely of medium and small businesses, is in a difficult position to spend on research and development.

If in the fishery, as in other sectors, future economic growth will be dependent on innovation and on a shift from competitiveness in terms of price to competitiveness in terms of quality then one can ask what are we to do in southeast New Brunswick? There are some positive developments in the province on this front. Four years ago a new Food Research Centre was established on the Université de Moncton campus. The centre has already met with considerable success. It is geared to work in close cooperation with the private sector with a special emphasis on small business. It has, for example, developed several new food products for small companies. These firms are now marketing these products inside and outside New Brunswick. It has also helped numerous small firms to solve quality problems. Our consultations confirmed that the centre is well received in the fishing industry. The centre now constitutes a strength on which we can build some of our future research and development efforts in New Brunswick.

There are also over 26 smoked herring operators in southeast New Brunswick, concentrated in the Cap Pelé area. For the most part, they are successful operations. They are also important for the economy of southeast New Brunswick. They employ well over 400 people (i.e. direct employment) for twenty weeks of the year (e.g. more weeks than in lobster and crab processing plants). In 1987, their economic impact in the local economy was estimated at $15 million. Together, the operators in the area account for 95 percent of all Canadian exports of smoked herring products.

There are also strong signs that the operators are collaborating to promote the interests of their industry more now than at anytime in the past. There is now, for example, an association of smoked herring operators in southeast New Brunswick.

In our consultations, we were told that the operators are convinced that there are markets abroad that have never been tapped. They argue that more sales could be made, for example, to the United States, particularly in the northeast states and New York. For example, some smoked herring products are very popular in some bars in New York. The president of the association reports, however, that the operators are ill equipped to search out new markets. It is important to stress that the operators are small entrepreneurs. Typically, the owner doubles up as production manager, office manager and marketing manager. They do not have easy access to new market intelligence or to special market research projects. Governments could provide valuable market development assistance to the operators. Great care, however, must be taken to ensure that the operators do not develop a long term dependence on governments for market development.

Our consultations unveiled a deep concern in the industry over the proposed construction of the fixed-link to Prince Edward Island. The industry is concerned that the construction could have a lasting negative impact on the resource. Industry representatives urged us to recommend that a "full blown environmental impact study" be carried out.

Our consultations also revealed that workers in processing plants are in some ways the "forgotten" people of the industry. They are rarely consulted by governments and some suggest that they are viewed as an adjunct to the industry rather than full members. They may well have a point. For example, the DFO's Gulf region has about 50 consultative committees of one kind or another. Until 1987, processing plants workers were not represented on any of the committees.

Lastly, some observers suggested that the province's sports fishery holds promise for economic development but that it is being left largely unexploited. They argued that governments could play a pivotal role in developing the full potential of the sports fishery.

The Northeast

The northeast fishery is in great difficulty — some insist that it is in a crisis situation. To be sure there are few reasons to be optimistic about the future. The problems are wide-ranging and to many in the region, all too familiar.

This study has already shown the depressed state of the northeast fishery. Suffice to note here that groundfish processing facilities in the region are operating at less than 20 percent capacity. Lack of resource, serious over capacity, and competition with two large firms made strong by federal government assistance are playing havoc in the northeast fishing industry.

On the supply side, the outlook is at best uncertain. Resource constraints preclude any large increase in fish landings. Though this is not to suggest that every effort should not be made to secure more groundfish quotas for the region, it remains that strong competition for limited resource will persist over the longer term. The over capacity in havesting and processing also preclude any expansion in employment. The challenge then is to manage better what we have, seek to secure more quotas — however gradually — point to new development opportunities and take advantage of them.

The challenge, however, is not made easy by new difficulties in areas that witnessed strong growth in recent years. The northeast crab industry has benefited from the decline of the Alaska crab fishery. With adequate resource and new found markets in Japan, the crab industry was able to expand very rapidly in the early 1980s. However, resource recovery in Alaska combined with resource depletion off the northeast coast has sent the industry in a tailspin.

In our consultation, we detected a deep frustration with the state of fishery. Some suggest that opportunities in the once promising crab fishery were squandered. The resource was over fished with quotas not always respected. We were told, for example, that the crab fishery is one of the most difficult to police. Crab processing licences were awarded on the basis that future growth would equal the growth witnessed in the early 1980s and that the resource would always be plentiful. As one observer put it "to put it bluntly, the gold rush mentality bagged another promising fishery."

That said, we detected a certain degree of cynicism towards the fishermen. Perhaps for historical reasons, there is a view that fishermen somehow should not make as much money as some of them make. It is quite acceptable, even, applauded, if an entrepreneur makes $250,000 and more per year. There is a view, however, that a fisherman is somehow not entitled to that kind of money. In short, he is not viewed for what he is — a modern day entrepreneur. Fishermen are of course not unaware that such a view exists. This, in addition to the very difficult problems facing the fishery, explains the low morale that may exists among fishermen, particularly in the northeast.

We did not want, however, to dwell on the problems or search out people to blame for thw depressed state of the northeast fishing industry. Our hope was to focus the consultations on possible solutions. We were able to explore a good number of suggestions.

We heard the expected: secure more groundfish quotas. The region feels very strongly that it ought to be allocated quotas to take groundfish in 2J3KL — a zone set aside when the 200 mile extension was declared. Such quotas, we were told, would help to stabilize the industry and provide the resource for the processing plants. It is also strongly held that a consortium from the northeast or a joint northeast New Brunswick and Quebec consortium should be allocated more quotas. Such quotas would enable a consortium to acquire a freezer trawler. A freezer trawler would take back groundfish to plants in the northeast and by freezing the fish at sea, the production at the plants would be better controlled. This would be unlike the current situation where the fish landed is fresh which inevitably means short-term production and short-term jobs for plant workers.

The provincial government's proposed Fish Processing Act is a positive development for the region's fishery. The act will enable the provincial government to tailor the number of processing licences available to the availability of the resource. The act is widely applauded in the industry. In the case of the crab fishery, however, the act may accomplish little more than closing the barn doors after all the horses escaped.

Our consultations revealed a strong demand for more research and development activities in the northeast region. Much was said about expanding the number of products and increasing the value added of existing products. The industry in the northeast feels strongly that too much of government sponsored research and development activities in the fishery have been carried out outside of the region. The industry insists that to be effective, research and development activities must be carried out close to the resource and the industry.

We asked about opportunities to develop and process new products. To ensure a better utilization of the existing capacity, we also asked about the possibilities of processing other products such as fruits and vegetables.

The suggestion was not rejected out of hand but we were told that there are some constraints. Entrepreneurs pointed to what they labelled the "U.I. syndrome" in the workforce insisting that many workers only want to work the required number of weeks to qualify for unemployment insurance. They also argued that many issues would have to be addressed before processors would attempt to process fruits and vegetables. For one thing, proper market studies would have to be carried out. For another, processing fruits and vegetables would require, among other things, new investments in machinery. Entrepreneurs argue that without government assistance to explore whether opportunities truly exist to process fruits and vegetables in existing processing plants and to launch such activities if opportunities do exist then little will happen.

We heard time and again that opportunities do exist with underutilized species such as silver hake, mackerel, and with so-called junk fish such as sea urchins. There are plenty of such fish available and harvesting and processing, we were told, offer promise for new employment. Fishermen, for example, do not catch much more than one-quarter of their

annual quota of mackerel and a lot of this simply goes for lobster bait. Yet, mackerel is well known to be a nutritious food, rich in omega 3.
We were also told that new market opportunities for mackerel could exist in the United States and the Far East. Still there are constraints. It may well be that technology transfer projects will be required to harvest underutilized species at a cost that the market place will accommodate. More efforts are also required to identify specific new market opportunities for these species. We are not in a position to assess to what extent opportunities exist in further exploiting underutilized species. We would suggest, however, that governments launch a major study to determine the full potential of underutilized species and how the potential, if any, can be realized.

Aquaculture also holds promise for the northeast and the southeast regions of the province. Commercial shellfish culture (blue mussels and American oysters) is primarily carried out in the two regions. The quality of mussel growing area in New Brunswick compares favourably with those in the neighbouring provinces. We are informed that site suitability is not a major constraint to further aquaculture development.

Generating the required level of investments, however, constitutes a major constraint. Returns on investment can require up to seven years to be realized given that it can take up to seven years for oysters, for example, to reach full market size.

Another constraint, we were told, has been the lack of research and development in support of aquaculture development in the southeast and northeast. The recently released report of the New Brunswick Task Group on Aquaculture observed that "by comparison there has been considerately more research and development devoted to the salmonid fishes of New Brunswick than to any other cultured species or species groups."[1] The report also explains that much of the salmonid research and development was carried out prior to the "comparatively recent advent of commercial salmon culture in southwestern New Brunswick."[2] The St. Andrews Biological station, the Atlantic Salmon Research Centre in Chamcook, the fish hatcheries of DFO, the many programs operated by the government of New Brunswick, and the research work of the Biology Department at U.N.B. all made and are making important contributions to salmonid aquaculture. There is no comparable research and development infrastructure in support of aquaculture development in either the northeast or southeast.

Little aquaculture research has been undertaken on any of the hardshell or softshell clams in New Brunswick waters. Preliminary work is just now being launched, for example, on scallops and this work is being undertaken in southwest New Brunswick. Some work is also now being undertaken on the lobster.

Though our consultations revealed a perception that governments gave more support to aquaculture development in the southwest than elsewhere, we offer a word of caution. Beginning in the 1970s the federal and provincial governments have put in place a number of costly measures to promote aquaculture development in the southeast and northeast. There appears to be strong markets for mussels, oysters and clams. We are told that much more could be accomplished in identifying new markets in central Canada, eastern United States, and Europe. The recent problem in Prince Edward Island concerning toxins in mussels was a setback. But the industry has bounced back and prospects are very good for future growth in sales.

As noted earlier, the task group on aquaculture in New Brunswick recently presented its report and made a series of recommendations. There is no need to repeat the recommendations here. Suffice to say that we would strongly urge governments to place much more emphasis on aquaculture development in the northeast and the southeast. It holds promise for new employment creation. Specifically, more efforts should be channelled on research and development on selected species (e.g. oysters, mussels, clams, halibut, and lobster) that are suited to conditions found in the northeast and southeast. We would also recommend the establishment of a hatchery in the east. In addition, governments should address the problem of financing new aquaculture operations for shellfish (e.g. mussels). Banks do not have great confidence in the industry and are asking producers for the kind of guarantees that are making it difficult for aspiring operators to secure the necessary funding to launch new businesses.

Governments can also play an important role in promoting New Brunswick mussels for what they are — high-quality cultivated mussels. Governments could also encourage closer cooperation between growers. They can encourage, for example, pooling of costly machinery, exchange of ideas and marketing development.

There is little doubt that increased groundfish quotas, greater exploitation of underutilized species, more research and development on possible new products, more marketing efforts, possible use of processing plants for fruits and vegetables, and a stronger commitment to aquaculture development would spur development and strengthen the northeast fishery.

We do not believe, however, that this would be sufficient. Our consultations with area residents and government officials brought this point home. The economic adjustments required as a result of the collapse of the crab fishery and the general over capacity that currently exist in the fishing industry in the region require solutions that must be found outside of the fishery. While governments can put in place new measures to protect employment in the fishery, to promote investment, and deal with declining stocks, they will also have to look to other fronts to create new employment opportunities.

Given that the bulk of the adjustments that is required is on the Acadian peninsula, we recommend that new special development efforts be developed specifically for this region. Past special regional development efforts in the area covered a wider region, including the counties of Restigouche, Gloucester, and a small area in Northumberland county. We suggest a much more targetted effort in part because the efforts should not be diluted and in part because the fiscal position of both levels of government is much weaker than it was ten years ago when a subsidiary agreement on the northeast was signed. In addition, the Acadian peninsula, more than any other area in the northeast region, has serious structural deficiencies and requires special assistance to promote new economic activities.

New regional development efforts in the region should be planned as carefully as possible. We should designate it as a special area eligible for special assistance under federal and provincial government economic development programming. We should look at the Acadian peninsula with the purpose of developing a comprehensive study of both problems and potential. From there, a *realistic* plan should be prepared to exploit opportunities to utilize labour, natural resources and capital more fully and more efficiently. In short, the plan should focus on areas where output and incomes are lower than they could and should be, because the labour force, the natural resource endowment, or the capital stock is underutilized or badly utilized. The plan should also seek to involve local economic players (e.g. Caisse populaire) and focus on developing human resources potential to a far greater extent than past efforts have.

NOTES TO CHAPTER EIGHT

1. Report of the New Brunswick Task Group on Aquaculture, Fredericton, 20 June 1988, p. 16.

2. *Ibid.*

CHAPTER NINE

THE RECOMMENDATIONS

Three forces shaped our recommendations. First, the consultations proved extremely valuable and there are no recommendation that follow which were not suggested to us by at least one person we consulted. In the great majority of cases, several people made the same or essentially the same suggestions. Second, the recognition that limited resource is an important constraint on the expansion of New Brunswick's first processing industry. Opportunities for growth are thus limited. Accordingly, the way ahead in the traditional fishery is to put in place measures to increase the competitiveness of the industry, extract more value from the available resource and to identify new markets. That said, there is a strong case that New Brunswick can make for increasing its share of the resource, particularly groundfish. The third force is the recognition that the solutions for the fishery dependent region, the Acadian peninsula, do not lie solely in the fishing industry. Given the limited resource and the over capacity that now exists in havesting and processing, governments have to look elsewhere for measures to promote economic development in the peninsula.

Arranging the Recommendations

In order to better define the scope of each suggestion made and to put each one in the overall context of the industry, we proceeded in a systematic fashion by dividing the 29 recommendations in 7 groups. The first group (recommendations 1 to 3) concerns cooperation between government and industry participants; the second (no. 4-5) deals with provincial strategies relating to fisheries; the third (no. 6-15) is about the potentials to be developed or at least examined more closely, with recommendations no. 13-15 dealing specifically with the development of aquaculture. At least three recommendations (no. 16-18) relate to the harvesting and processing capacity. Suggestions aimed at increasing research and development in order to stimulate innovation in the industry make up the fifth group (no. 19-23). These are followed by recommendations no. 24 and 25 pertaining to the marketing of fishery products and the development of new markets. Finally, 4 specific recommendations (no. 26-29) complement this overall plan.

Note that the numerical order of the recommendations has no bearing on their level of importance or their urgency for implementation. The department will have to evaluate each one based on existing constraints and available means.

Cooperation Between Participants in the Industry

1. *The Department of Fisheries and Aquaculture*

   In our view, it is not possible to support the fishing industry to develop further without first fully recognizing the regional nature of the New Brunswick fishery. We recommend that the organization of the Department of Fisheries and Aquaculture reflect this reality. It is, of course, beyond the scope of this study to recommend specific organizational changes for the government. That said, we want to impress on the government the strongly held view in the industry and in all three regions that it is impractical to look at the New Brunswick fishery from a provincial perspective and to stress the importance of having a regionally-sensitive Department of Fisheries and Aquaculture.

2. *Establishing Regional Advisory Councils*

This study showed time and again that the New Brunswick fishery differs substantially from region to region. Our consultations also confirmed that the industry and government officials view the fishery from a regional perspective.

In recognition of the strong regional nature of the New Brunswick fishery, we recommend the establishment of three advisory councils, one for the southwest, one for the southeast, and another for the northeast. The purpose of the three advisory councils should be to advise governments on ways to deal with the problems and the opportunities facing the local fishery. To ensure that the councils have direct access to key decision makers and to timely data on which to base their recommendations, the provincial fisheries department should provide the necessary secretariat and research support to the councils. Industry representatives, including fishermen, processors, plant workers, federal and provincial officials should be invited to sit on the councils. In time, consideration should be given to establishing a provincial advisory council to advise the Minister on problems and opportunities in the fishery sector.

3. *The Participation of Fish Plant Workers*

We saw in this study that fish plant workers are often overlooked by governments in planning new policy initiatives and in seeking new ways to regulate the fishery. Yet, plant workers are numerous — they constitute the bulk of the work force in the fishing industry, they have little influence in the industry, and yet they can play a pivotal role in introducing new production techniques, new products, increase the value added and improve quality control in the plants.

We urge governments to invite representatives of fish plant workers to sit on their various advisory and consultative committees. Specifically, we recommend that they be invited to participate on the new regional advisory councils should the provincial government decide to establish them.

Provincial Strategies

4. *A New Federal-Provincial Fisheries Agreement*

The provincial and federal governments should negociate a new five-year subsidiary agreement. Other recommendations which follow should be considered in planning the agreement. We are not in a position to provide a cost estimate of a new subsidiary agreement. Federal and provincial fisheries officials are obviously better suited to cost proposed programs and to manage the give and take of federal-provincial negotiations in costing shared-cost programs. A new fisheries agreement, however, should provide programs to promote:

- aquaculture development
- marketing of fisheries products
- research and development
- fleet rationalization

5. *Regional Fisheries Development Plans*

In preparing a new subsidiary agreement, governments should prepare three regional plans to develop the fisheries in the southwest, southeast and northeast. It was pointed out time and again that each region has its own set of problems and opportunities. For example, aquaculture offers much more immediate and promising opportunities in the southwest than in the other regions of the province. A special development plan rooted in the development prospect of the southwest, another in the southeast and another in the northeast hold, in our view, more promise for the provincial fishery sector than a provincial wide plan.

Development Opportunities

6. *Increased Groundfish Quota*

Our consultations revealed a strongly and widely held view that New Brunswick should be allocated a higher groundfish quota. Industry representatives and government officials insist that New Brunswick has a legitimate case for more groundfish. We were told, for example, that New Brunswick has an historical claim to the northern cod, but that it has been consistantly overlooked.

We recommend that the Department of Fisheries and Aquaculture in collaboration with the industry make strong representations to federal government authorities to secure increased groundfish quotas in Canada's 200 mile economic zone.

7. *Development of the Clam Fishery*

This study reveals the importance of the molluscs fishery to the economy and also that many of the people we consulted pointed to it as having strong growth potential. We urge governments to explore the potential of the clam fishery and put in place measures to develop it into a self-sustaining fishery. Suggestions were made during the consultation that government should look upon the clams, oysters and mussels as an important fishery in its own right and no longer regard it as essentially "side attractions" having little lasting economic prospects. Our data suggests that these fisheries are economically important and now require appropriate development and management measures. Governments could assist the shellfish industry, in particular the clam fishery, through research and development measures, and marketing efforts.

8. *Mackerel - Developing its Potential*

In our consultations, we were told time and again that mackerel holds considerable prospects for the New Brunswick fishery. It is currently underfished. The mackerel is high in protein. Many, including leading spokespersons of the fishing industry, argued that much more could be done with the mackerel in terms of product development and marketing. We recommend that governments sponsor a study to assess fully the economic potential of the mackerel and to identify specific ways to realize this potential.

9. *Junk Fish*

Some observers of the fishing industry suggest that growth in the fishery of tomorrow may be fuelled by so-called "junk fish" rather than by lobster and cod.

Unlike lobster and cod, there are plenty of junk fish in the ocean (e.g. sea urchins and sea cucumbers). It is argued that our fishing industry has, in large part, fully identified and exploited the most evident and the most readily processed and the most cost effective resource bases. The industry must now look to new frontiers and new species. Sea urchins and sea cucumbers may well be considered inedible by Canadians but they have a high protein content. There may well be markets abroad for such products.

It is not possible for us to assess the potential economic impact of exploiting "junk fish." We would recommend, however, that governments launch a major study on the matter.

10. *Minimum Size of Lobsters*

As outlined in the study, lobsters represent the most lucrative species fished in the province, especially in the southeast where dependency is very strong towards this resource. Several people have suggested that we could benefit more from it if its minimum size were increased. For that, we would have to let the reproductive stock grow sufficiently in order to ensure a better renewal of the resource. In the short term, we can obviously expect a decrease in landings, but these would soon be made up after a few years. On the other hand, a respectable minimum size for lobsters harvested on the eastern coast of the province would allow us to supply the expanding markets for fresh in-the-shell lobster which are much more lucrative than those for frozen meat.

We therefore recommend that a major study be undertaken specifically to determine the effects on the fishing industry (i.e. on fishermen, processors and plant workers) of increasing the minimum size of lobsters caught on New Brunswick's coasts.

11. *The Waste Problem*

It is recommended that a detailed study be made on the possibility of using fish wastes, especially those from herring, to manufacture food products for the aquaculture industry in the province and elsewhere. Such an initiative would also help to protect the environment.

12. *Developing the Sports Fishery*

The sports fishery in New Brunswick holds promise for economic development and employment creation. Some efforts have been made to develop the sports fishery but much more could be done. The sports fishery may well offer prospects for new employment for those in the traditional fishery (e.g. fishing guides). In addition, we urge governments to look at prospects of creating new employment in our native communities through the sports fishery.

Aquaculture

13. *A Federal-Provincial Memorandum of Understanding in Aquaculture*

Aquaculture offers excellent potential for future growth. To ensure the growth is orderly and lasting, we recommend that both levels of government sign a Memorandum of Understanding (MOU) which would state clearly who is responsible for what. This MOU should extend beyond the management of aquaculture development programs and include who is responsible for approving new aquaculture sites, and for implementing new regulations. This is vitally important to manage the growth in aquaculture and the trade-offs that may be required between the traditional fishery and aquaculture. The MOU should also clarify roles in delivering aquaculture related services to the industry.

14. *Aquaculture and Local Entrepreneurs*

Joint federal-provincial efforts to develop aquaculture should focus on local entrepreneurs. We were told that local entrepreneurs not only stay in their communities, but tend to reinvest their profits there. Larger national or even regional firms are much more footloose and their development is not always lasting.

15. *Developing Aquaculture*

There has been considerable work of late in New Brunswick on identifying ways to develop further the aquaculture industry. There is no need to review the work in detail here. Suffice to say that a group of federal and provincial officials, outside experts, and representatives of the private sector recently tabled a report on aquaculture development. A review of all these efforts suggest that we are now ready to put together a package of measures to promote aquaculture development as part of a new fisheries subsidiary agreement. The task group report contains a number of important recommendations and we urge both governments to look to them to develop further the aquaculture industry.

In particular, we recommend the establishment of a shellfish hatchery. The hatchery would assist in the development of a research and development program for the commercial culture of new shellfish species such as the giant sea scallop and the European oyster.

Harvesting and Processing Capacities

16. *Developing a Freezer Trawler Fleet*

We recommend that the Department of Fisheries and Aquaculture in cooperation with the industry plan the development of a freezer trawler fleet. As is well known, the development of a freezer trawler fleet in New Brunswick is directly tied to increased groundfish quotas. Such a fleet, after securing the necessary quota allocations, would be able to supply resources to fish plants throughout the year and thus reduce the seasonality of employment in the fishing industry.

17.. *Limiting Processors Licences*

This study documents the over capacity which now exists in the processing sector. The logical conclusion resulting from these findings is for the provincial government to declare a moratorium on the granting of any new licences to process fish.

18. *Fishing Efforts*

It is often stated that there is an excessive overcapacity as regards New Brunswick's fishing fleet. It is to be noted, however, that the ability to benefit most from a common resource depends greatly on the harvesting limits set by each operating license. Since competition is ever increasing between the various provinces involved in fishing in the Gulf and since the number of operating licenses for each province is fixed, New Brunswick has to pay close attention to this and ensure that its operating licenses are maximised. It is a fact that New Brunswick's share of the catches for certain species in the Gulf are decreasing, in favour of the other provinces which put more emphasis on harvesting (as shown by the recent increase in Quebec's crab and perch fishing fleet, and in PEI's perch fleet). For example, Quebec's fleet increased its perch catches by at least 12,000 t in the last few years, compared to less than 2,000 t in New Brunswick's case. Even with crab fishing, where our predominence has been outstanding in the past (over 70 percent of the catches in the Atlantic), our share of the harvest is decreasing (less than 30 percent now). To counter the initiatives of neighbouring provinces, our province should, logically, increase its investments and fishing capacity which is, however, now judged to be excessive. If we were to proceed this way, we would be contributing with the other provinces in creating a fishing fleet way beyond our needs in the Gulf. In short, no one would gain from this approach.

In order to protect what we have acquired in the Gulf, we will probably have to keep on investing in the upgrading and renewal of certain units of our fleet, especially with respect to ocean perch and shrimp fishing which offer attractive opportunities in harvesting and world markets. The issue of economic profitability cannot serve as a pretext for turning our backs on these species, for fear of slowly losing our quotas in the Gulf, to neighbouring provinces. At the same time, the provincial department of Fisheries should make every effort to urge DFO and neighbouring provinces to slow down this harvesting race as everybody stands to lose in the long run. During such negociations, New Brunswick could maximize its share of the catches by insisting on the historic rights of the province's fishermen working the Gulf waters.

In the financing of fishing boats and equipment, consideration should be given to the maximization of catches in relation to overall quotas assigned. If certain operating units of a fleet are not capable of harvesting their fair share due to efficiency or mobility problems, they should be given top priority in terms of financing. By paying special attention to outdated, non-efficient units, the maximization of a given fleet's performance is greatly enhanced.

Productivity and Innovation

19. . *Research and Development*

It is hardly possible to overstate the importance of research and development to the future of the New Brunswick fishery. Virtually everyone we met stressed its importance for both aquaculture and the traditional fishery.

Measures to promote research and development should be an important component of a new fisheries subsidiary agreement. There are already well-established research and development strengths on which expanded efforts can now be built. The province's research and development capacity in aquaculture is solid but much more can be accomplished. The task group report makes a number of recommendations in this area. Suffice to note that we strongly urge the establishment of a coordinating body to assist in developing further aquaculture research and development in New Brunswick. In addition, given the precarious position of the fishery in northeast and southeast New Brunswick, we also strongly urge new research and development efforts in shellfish (notably scallops, clams, mussels, and oysters).

We also recommend more funding for research and development efforts in the traditional fishery. The Food Technology Centre at the Université de Moncton has met with considerable success even since it was established. It has been particularly successful in working with the private sector, notably the small or aspiring entrepreneurs who little or no research and development capability of their own. We encourage both governments to assist, for a set period of time, say, five years, in developing further the centre. We caution that a more permanent arrangement may well make the centre dependent on government funding and in time lethargic. The centre's attractiveness is its demonstrated capacity to work well with the private sector and every effort should be made to ensure that it continues in this direction.

We recommend that governments, perhaps under the fisheries subsidiary agreement, should assist the centre to expand its facilities to service the fishing industry in northeast New Brunswick. We recommend that the centre establish a satellite office in the Acadian peninsula, more specifically on the Shippagan campus of the Université de Moncton. The office should make every effort to collaborate with the private sector, to develop new products, increase added value of some products and develop better quality control of existing products.

20. *Research and Development and The Marine Centre*

The Marine centre in northeast New Brunswick holds considerable promise in research and development. It has important infrastructure facilities in place and some resarch and development successes to its credit. The centre can now build on these strengths but it will require support. We recommend both levels of government to intensify their research and development efforts in the northeast and to turn to the Marine centre as the basis for these efforts. In particular, we urge the federal government which has very limited research and development activities in northern New Brunswick to locate some of its research and development efforts in the Marine centre.

21. *Value Added and Further Processing Opportunities*

We were told time and again that New Brunswick exports far too much unprocessed fish and that even when we do process the fish locally, we could do more. That is, our processing plants could further process the fish and substantially increase the value of the products they export. In doing so, they would also create new employment opportunities. We would urge governments to sponsor a study which would identify "all" fish products that offer potential for a second and third level of processing.

22. *Training and Human Resource Development*

Technological change, the push for increase value added through further processing, the new skills required to develop furter aquaculture, among other changes and challenges, will require professional development skill training, skill upgrading, and retraining. Past efforts to develop the New Brunswick fishery have not place sufficient emphasis on training and human resource development.

We recommnd that future development efforts in the fishery, including a new fisheries subsidiary agreement, place strong emphasis on training and human resource development. We urge the establishment of post-secondary training to assist the development of aquaculture, new emphasis on extension training, and more in-house training for processors, wholesalers and retailers of fishery products.

We also recommend that the provincial government further strengthen "l'École des pêches" in Caraquet. There are prospects for future growth of the school by promoting its expertise worldwide and inviting students from abroad to attend. The school is particularly well suited to serve students from French-speaking countries and the government of New Brunswick should make every effort to promote the school through its participation in "La Francophonie."

In addition, governments should promote the degree program in fisheries marine at the Shippagan campus of the Université de Moncton. The program is vitally important to the future of the northeast fishery and should be supported. In addition, governments could promote the program abroad and again seek to attract new students to the program through "La Francophonie."

23. *Upgrading of Plants*

It is recommended that new investments be encouraged in the processing plants so as to maintain our competitiveness, diversify our products and increase added value. The introduction of new technologies is essential if we want to keep pace with our competitors who have already oriented their efforts in that direction. The liberalization of exchanges with the United States will be beneficial as long as our processors can withstand American competition. This may prove difficult if, as expected, our dollar reaches parity with the US dollar after the signing of the free trade agreement. Conners Brothers is already being upgraded, and succeeds rather well on the highly competitive canned herring markets.

Markets

24. *Marketing Products*

We saw in this report that bloater operators and smoked herring products play an important economic role in communities in southeast and southwest New Brunswick. We also saw that the operators are convinced that new market opportunities exist. Individually, the operators are too small to launch a major marketing drive of the kind that, say, Connors Brothers did a few years ago for its sardine products.

Collectively, however, they likely could. There are important signs that the operators are now cooperating much more than at anytime in the past. This is true in both the southwest and southeast. Governments should encourage even closer cooperation among the operators and assist them in defining and launching a major marketing strategy to sell more of their products within Canada and abroad. Again, governments must guard against making such assistance permanent for fear that the operators will simply sit back and let governments worry about identifying new market opportunities.

25. *Establishing of a Marketing Bureau*

It is recommended that an agency be established in New Brunswick for the marketing of fishery products. This agency's role would be to coordinate the commercial activities relating to all species processed in the province. The New Brunswick Association of Packers could be wholly or partially integrated to it in some way. This agency would also be involved in collecting data pertinent to supply and demand, prices, rates of exchange, etc. The statistics branches of Fisheries and Oceans (Moncton) and Fisheries and Aquaculture (Fredericton) could provide assistance in this regard.

It is recommended that the opportunities provided by the Canadian market for certain fishery products be examined at length in terms of the domestic distribution network and the American network from Boston. If the American market were to become more competitive, our producers would be well advised to develop more fully the domestic market, at least for some products.

Other Recommendations

26. *Fishermen as Processors*

The provincial government also controls the selling of existing licences to process fish. We were told time an again in our consultations that the provincial government should in future ensure that no processing licensing is sold or granted to fishermen. Fish processors and others expressed deep concern in our consultations over the ability of fishermen to secure processing licences. As one processor explained: "A processor cannot be a fisherman and a fisherman should not be a processor." It is true that fishermen who are able to obtain a processing licence are able to become extremely powerful economic agents in their communities. When the resource is in very short supply (e.g. crab), processors are always scrambling for the fish. If the fisherman can double up as the processor then the competition is anything but fair to those who do not have both fishing and processing licences.

We fully accept this agreement. Yet we also recognize that the matter is not so simple and that there could well be arguments in favour of retaining the status quo or something like the status quo. We were told, for example, that in at least one case in northern New Brunswick the ability of the fisherman to double up as processor brought stability to a potentially difficult situation.

Accordingly, we recommend that the provincial government launch a study on the merits of both situations (i.e. whether or not fishermen should also be processors).

27. *The Acadian Peninsula - A Special Area*

This study makes clear that the fishery in northeast New Brunswick is facing serious problems and that, given the over capacity which now exists in the industry, there is little prospects that all the solutions can be found in the fishery.

In short, the fishery by itself cannot solve the economic adjustment problems confronting the Acadian peninsula. It is unlikely that any other industry or a single government measure could also absorb all of the surplus labour and underutilized human resource in the area. We have enough experience with economic development efforts in the area and elsewhere to know that there are no panacea and that solutions will not be easy.

We recommend that the provincial government designate the Acadian peninsula as a special area requiring new economic development measures and that it make every effort to have the federal government also designate the area for the same purpose. Ideally, a new federal-provincial multi-year economic development plan should be negotiated for the Acadian peninsula. The development of the plan should involve local residents, federal and provincial government officials and outside experts. The central purpose of the plan should be to exploit all available opportunities to utilize labour, natural resources and capital more fully and more efficiently.

28. *Distribution of Information on Fishing*

In order to improve the fishery's opportunities in the province, it is essential that the various people involved in the industry have access to the most up-to-date information. In addition to the present information system on fisheries, it would be useful to publish a periodic profile of the industry, with the main data being presented under each sector of activity. A close collaboration between the regional offices of Fisheries and Oceans and those of the province would be beneficial in this regard.

29. *The Fishery Study - Phase II*

In our discussions with provincial and federal government officials, it was envisaged that a second phase to this study may well be necessary to pursue several issues identified in this study. Because we were asked to prepare this report on an urgent basis (i.e. in about three months time), it was felt that we could not possibly assess the full implications or potential of some of our findings.

It is now clear that several issues identified in this study require further study and we recommend that governments follow up with a second phase to this study. Issues that require further study include, among others:

- a study of the economic potential of underutilized species, in particular, the mackerel;
- a study of the economic potential of junk fish (i.e. sea urchins and sea cucumbers);
- a study on the development opportunities of the sports fishing;
- a study is required to assist the provincial government in strengthening its case for more groundfish quotas for New Brunswick. There are solid arguments that can be made, including historical arguments. Given the resource shortage, the intensive competition for fishing quotas and the nature of the federal government decision-making process, New Brunswick will require a solid case.

There are other issues that will require further study. Fortunately, there are now competent consulting firms in New Brunswick quite capable of carrying out such studies. Some of these firms are developing a solid reputation provincially, regionally, and nationally. They are now trying to compete in international markets. The firms have the potential of making an important contribution to the provincial fishing industry and to the provincial economy. New Brunswick can and should encourage the development of local expertise in the fishing through various means. We now have in the province a solid consulting capacity to undertake studies identified in this report. Since a success usually leads to another, every effort should be made to develop further the province's consulting capacity by turning to our own firms to carry out studies identified in this report. In time, we may well find other provinces and foreign countries coming to New Brunswick firms for expert advice on their own fisheries problems.

ANNEX

Table 1
Landed Quantities by Species, New Brunswick, 1970-1987
(metric tonnes)

Year	Cod	Haddock	Redfish	Flatfish	Pollock	Hake	Others	Groundfish
1970	9,393	637	13,734	6,793	670	822	619	32,668
1971	8,310	368	14,104	6,044	417	1 084	485	30,812
1972	9,866	163	13,552	4,959	211	895	454	30,100
1973	6,026	124	16,892	4,465	696	812	378	29,393
1974	4,395	87	6,780	4,958	387	621	478	17,706
1975	5,733	155	7,670	6,100	395	532	225	20,810
1976	3,936	42	5,870	5,532	181	382	303	16,246
1977	6,862	89	4,853	5,755	180	526	622	18,887
1978	7,283	335	3,800	5,006	75	644	337	17,480
1979	11,809	163	3,599	5,582	960	993	386	23,492
1980	11,710	374	1,105	4,079	1,788	1,371	466	20,893
1981	13,852	188	2,640	2,712	1,118	1,781	289	22,580
1982	14,626	212	2,399	2,553	1,517	1,911	200	23,418
1983	15,931	139	1,656	2,114	594	999	177	21,610
1984	11,266	83	2,238	1,817	470	1,253	36	17,163
1985	12,775	145	2,797	2,800	796	1,148	96	20,557
86	13,447	168	3,649	2,227	1,934	794	160	22,379
7	10,002	134	3,946	3,191	2,382	553	158	20,366

Year	Herring	Mackerel	Tuna	Alewife	Eel	Salmon	Smelt	Others	Pelagics
1970	147,671	3,638	2,937	2,134	298	260	1,029	61	158,028
1971	109,745	2,251	3,038	2,991	324	122	676	176	119,323
1972	110,268	1,779	4,756	1,619	274	10	605	43	119,354
1973	74,342	3,189	7,584	2,489	220	10	593	129	88,556
1974	70,942	2,742	7,209	1,441	157	4	762	374	83,631
1975	76,032	1,105	10,278	1,047	123	3	844	63	89,495
1976	75,301	659	6,599	1,997	120	12	1,200	72	85,960
1977	84,365	809	5,739	3,395	165	31	1,178	316	95,998
1978	106,019	1,116	3,669	3,236	82	67	1,158	1,375	116,722
1979	78,358	2,559	2,466	4,420	149	21	1,410	2,948	92,331
1980	51,166	3,117	53	5,274	160	67	1,547	1,470	62,854
1981	43,180	1,928	295	2,812	196	103	1,475	106	50,095
1982	44 567	2 313	18	2,079	157	84	1,932	118	51,268
1983	49 952	1 734	29	1,981	98	71	652	52	54,569
1984	43 727	1 085	20	2,814	125	14	679	73	48,537
1985	72 627	3 269	22	4,740	276		643	347	81,924
1986	80 428	3 723	1	3,080	284		1,573	154	89,243
87	94 547	2 676	1	5,655	217		1,198	138	104,432

Table 1 (continued)

Year	Clam	Oyster	Scallop	Lobster	Shrimp	Crab	Others	Molluscs & Crust.	All specie
1970	1,731	217	312	2,797	634	4,958	185	10,834	204,523
1971	2,476	312	274	2,663	431	4,578	274	11,008	169,411
1972	1,858	329	1,647	2,522	477	4,710	217	11,760	163,302
1973	2,109	286	1,154	2,415	403	5,908	308	12,583	131,768
1974	852	600	664	2,255	912	5,694	117	11,094	117,471
1975	675	838	670	3,045	746	4,050	167	10,191	123,812
1976	777	325	1,249	2,754	1,079	6,086	233	12,503	115,304
1977	1,104	229	873	3,340	1,115	7,331	240	14,232	130,203
1978	1,182	317	1,504	4,157	1,965	7,935	131	17,191	152,420
1979	1,371	367	1,086	4,371	2,435	10,950	814	21,394	137,819
1980	1,229	357	2,080	4,258	2,919	9,994	772	21,609	106,402
1981	1,607	252	5,785	4,309	3,100	14,084	445	29,582	103,037
1982	2 658	378	3 343	4,794	2,211	20,290	641	34,315	109,884
1983	1 689	400	4 171	5,362	2,197	17,534	387	31,740	108,188
1984	2 896	721	3 852	5,971	1,280	18,140	433	33,293	99,131
1985	3 650	740	3 489	6,805	1,710	16,764	219	33,377	136,024
1986	4 140	590	2 913	6,964	1,618	14,776	413	31,414	143,036
1987	3 522	413	2 964	7,435	2,373	7,925	747	25,379	150,177

Table 2
Landed Value by Species, New Brunswick, 1970-1987
(in thousands of dollars)

Year	Cod	Haddock	Redfish	Flatfish	Pollock	Hake	Others	Groundfish
1970	944	203	1,017	666	71	61	19	2,981
1971	963	116	1,014	564	56	79	14	2,806
1972	1,101	68	1,165	519	28	71	24	2,976
1973	979	58	2 016	597	87	81	27	3,845
1974	967	46	711	796	61	69	71	2,721
1975	1,202	72	948	1,003	71	63	14	3,373
1976	951	30	1,009	977	34	59	29	3,089
1977	1,757	38	903	1,109	43	86	44	3,980
1978	2,095	153	788	1,110	19	111	32	4,308
1979	3,728	103	867	1,531	244	191	48	6,712
1980	3,720	208	242	1,223	621	319	70	6,403
1981	4,727	89	662	825	393	379	42	7,117
1982	5,470	124	626	789	616	406	27	8,058
1983	6,413	74	447	671	215	202	26	8,048
1984	3,695	68	539	712	163	270	5	5,452
1985	5,017	138	679	1,364	284	217	22	7,721
1986	6,287	179	1,052	1,269	881	234	28	9,930
1987	7,830	215	1,367	2,386	1 711	280	44	13,833

Year	Herring	Mackerel	Tuna	Alewife	Eel	Salmon	Smelt	Others	Pelagics
1970	4,470	187	1,419	78	111	508	250	14	7,037
1971	3,685	129	1,456	123	171	247	184	24	6,019
1972	5,311	123	2,245	70	157	23	181	17	8,127
1973	4,116	258	3,501	125	135	25	226	22	8,408
1974	4,449	228	3,960	112	104	13	266	45	9,177
1975	4,538	147	6,176	84	98	10	220	29	11,302
1976	4 949	110	4,071	104	90	46	328	32	9,730
1977	8 896	130	4,555	187	116	99	321	62	14,366
1978	17 589	241	3,172	266	80	287	422	81	22,138
1979	14 746	634	1,929	416	187	97	585	157	18,751
1980	9 988	734	140	1,331	255	355	552	223	13,578
1981	7 042	406	425	374	309	596	592	79	9,823
1982	7 668	607	39	291	276	554	883	122	10,440
1983	7 709	561	37	333	164	473	291	68	9,636
1984	6 505	285	59	520	191	95	320	141	8,116
1985	10 900	736	48	843	501		756	275	14,059
1986	13 686	787	2	540	630		2,073	257	17,975
1987	17 107	880	1	838	643		987	183	20,639

Table 2 (continued)

Year	Clam	Oyster	Scallop	Lobster	Shrimp	Crab	Others	Molluscs & Crust.	All specie
1970	329	86	753	4,740	257	1,074	21	7,260	17,278
1971	510	133	659	4,768	173	817	18	7,078	15,903
1972	527	144	715	5,269	185	1,511	24	8,375	19,478
1973	569	129	438	5,685	169	2,453	36	9,479	21,732
1974	276	225	264	5,638	493	2,240	23	9,159	21,057
1975	211	335	280	7,432	332	1,574	31	10,195	24,870
1976	423	125	596	6,871	635	2,976	53	11,679	24,498
1977	375	137	351	9,671	702	4,182	41	15,459	33,805
1978	439	259	824	14,880	1,749	4,724	30	22,905	49,351
1979	537	349	959	15,506	2,180	8,204	294	28,029	53,492
1980	589	338	2,249	14,543	4,395	5,940	297	28,351	48,332
1981	834	285	7,050	16,134	4,660	8,438	110	37,511	54,451
1982	1,474	394	3,261	22,371	2,923	17,696	186	48,305	66,803
1983	1,298	482	6,342	23,637	2,631	26,993	124	61,507	79,191
1984	2,677	864	6,815	25,596	1,620	23,837	186	61,595	75,163
1985	3,824	867	5,819	32,278	2,138	17,462	122	62,510	84,290
1986	5,086	785	5,128	34,242	2,537	23,469	410	71,657	99,562
1987	4,234	884	4,832	42,136	5,191	23,562	1,174	82,013	116,485

Table 3
Landed Quantities and Values by Species and by Region, New Brunswick, 1987
(in metric tonnes and in thousands of dollars)

	Northeast		Southeast		Fundy		Province	
	Q	V	Q	V	Q	V	Q	V
Cod	8,348	5,803	142	70	1,512	1,957	10,002	7,832
Haddock	7	5			127	210	134	215
Redfish	3,934	1,358			12	9	3,946	1,367
Flatfish	2,671	2,030	351	106	169	250	3,191	2,386
Pollock	17	6			2,365	1,705	2,382	1,711
Hake	238	127	177	68	138	85	553	280
Others	46	10	83	18	27	16	156	44
Groundfish	15,261	9,340	753	262	4,352	4,231	20,366	13,832
Herring	49,340	10,677	4,020	772	41,187	5,657	94,547	17,106
Mackerel	1,098	384	1,167	445	411	52	2,676	881
Alewife	2,818	254	1,513	221	1,325	363	5,656	838
Eel	26	82	142	415	49	147	217	644
Smelt	461	327	716	632	21	28	1,198	987
Others	16	9	18	11	124	142	158	162
Pelagics	53,758	11,732	7,576	2,496	43,097	6,411	104,431	20,639
Clam	676	982	856	1,449	2,269	2,403	3,801	4,834
Mussel	55	24	224	359			279	383
Oyster	239	517	174	367			413	884
Scallop	256	453	514	819	2,195	3,561	2,965	4,833
Lobster	2,996	16,499	3,630	18,030	810	7,607	7,436	42,136
Shrimp	2,373	5,191					2,373	5,191
Crab	7,219	23,336					7,219	23,336
Others	316	135	386	89	195	193	896	417
Mollucs and Crustaceans	14,128	47,137	5,783	21,113	5,468	1,376	25,379	82,014
Other Products	377				166	196	543	736
All species	83,148	68,209	14,113	23,871	53,084	24,603	150,345	116,683

Table 4
New Brunswick Catches (Volume) as a Percentage of Total Landings in Atlantic

Year	Cod	Haddock	Redfish	Flatfish	Pollock	Hake	Others	Groundfish
1970	4.3%	2.8%	12.7%	4.6%	7.4%	10.7%	6.3%	6.2%
1971	4.1	1.5	12.5	4.3	4.2	8.7	3.8	6.0
1972	4.5	0.9	12.3	3.9	1.2	5.8	3.5	5.8
1973	3.4	0.7	10.7	3.4	2.6	5.2	3.1	5.4
1974	2.8	0.6	7.7	4.6	1.5	4.5	3.8	4.2
1975	3.9	0.8	7.5	5.9	1.5	4.3	2.1	4.9
1976	2.0	0.2	6.5	4.5	0.8	3.6	3.0	3.5
1977	2.9	0.3	7.3	4.2	0.7	4.5	5.5	3.7
1978	2.5	0.8	4.9	3.5	0.3	5.8	2.4	2.9
1979	3.1	0.5	4.5	3.7	3.1	7.6	3.1	3.3
1980	2.8	0.7	2.3	2.8	4.9	7.5	3.6	2.8
1981	3.2	0.3	3.7	2.0	2.8	9.1	1.9	2.9
1982	2.8	0.5	3.6	2.1	3.9	11.3	1.3	2.9
1983	3.1	0.3	2.8	2.1	1.8	7.6	1.4	2.8
1984	2.4	0.3	3.4	1.7	1.3	9.0	0.4	2.3
1985	2.7	0.4	3.9	2.5	1.8	7.6	1.1	2.7
1986	2.8	0.4	4.4	2.0	3.9	4.7	1.7	2.8
1987	2.2	0.5	4.9	2.6	4.8	2.8	1.5	2.7

Year	Herring	Mackerel	Tuna	Alewife	Eel	Salmon	Smelt	Others	Pelagics
1970	30.8	23.2	93.0	65.1	34.4	12.4	56.9	0.7	30.8
1971	26.2	15.1	98.2	64.1	30.7	6.7	48.9	4.9	26.6
1972	36.3	11.0	96.1	43.0	32.3	0.7	49.1	0.8	35.4
1973	32.8	14.8	95.5	41.9	34.0	0.5	39.1	1.6	32.4
1974	31.4	16.5	91.3	25.3	28.2	0.2	40.1	2.1	30.1
1975	31.4	8.2	96.7	23.1	19.2	0.1	45.4	1.0	31.9
1976	33.4	4.2	93.8	36.4	22.8	0.5	55.8	0.5	31.7
1977	36.8	3.6	90.7	44.1	25.1	1.5	60.7	1.8	33.4
1978	43.1	4.4	89.9	42.4	12.6	4.8	52.0	5.1	37.2
1979	41.8	8.5	91.8	49.3	22.6	1.9	55.4	9.7	35.2
1980	28.9	14.1	14.1	54.2	19.0	2.8	67.5	5.1	26.0
1981	26.7	10.0	48.0	50.2	22.1	4.8	68.9	0.3	22.4
1982	30.3	14.1	6.0	45.3	25.4	5.5	79.4	0.3	24.7
1983	35.1	8.8	7.0	61.2	18.6	5.8	61.3	0.2	27.2
1984	33.6	6.3	8.0	70.1	20.1	1.6	66.8	0.2	24.4
1985	37.6	10.9	17.1	58.6	35.2	0.0	72.6	0.9	30.2
1986	43.1	13.1	1.1	61.5	32.5	0.0	65.0	0.2	30.4
1987	38.3	10.1	0.4	64.7	27.5	0.0	83.3	0.4	32.8

Table 4 (continued)

Year	Clam	Oyster	Scallop	Lobster	Shrimp	Crab	Others	Molluscs & Crustaceans	Total
1970	40.5	17.6	5.3	16.9	31.4	64.7	32.3	28.3	19.0
1971	43.1	25.3	5.4	15.4	24.2	67.5	12.4	27.4	16.8
1972	49.3	36.6	3.8	16.8	34.5	67.1	42.6	16.3	17.5
1973	53.9	28.1	2.9	15.0	18.6	60.0	22.8	16.8	14.8
1974	33.3	48.1	1.3	15.8	25.9	54.4	19.1	13.0	15.0
1975	27.6	51.5	1.0	17.4	15.8	57.5	4.4	9.8	15.4
1976	32.4	29.2	1.3	17.1	21.5	56.7	2.0	8.9	13.1
1977	32.7	23.1	0.7	18.7	13.8	51.6	0.6	7.1	13.0
1978	30.4	21.4	1.4	21.7	19.5	37.7	0.2	7.5	13.2
1979	37.1	24.8	1.2	20.3	18.7	36.3	0.7	7.8	11.1
1980	28.9	23.6	3.0	21.2	21.9	34.8	2.1	12.4	9.2
1981	34.0	18.0	6.4	19.9	19.1	37.2	2.3	15.5	8.6
1982	42.7	28.6	5.1	21.0	17.2	42.0	4.7	20.2	9.2
1983	34.2	26.9	8.1	19.4	15.6	42.2	36.9	22.3	9.8
1984	43.7	32.1	10.6	20.8	10.9	42.5	17.7	25.4	9.3
1985	47.4	35.7	7.4	20.8	13.1	37.9	13.7	22.5	11.5
1986	57.0	25.5	5.1	18.3	11.0	34.5	12.1	19.0	11.4
1987	22.0	21.9	4.0	19.0	10.2	27.7	21.6	13.6	11.8

Table 5
New Brunswick Catches (Value) as a Percentage of Total Landings in Atlantic

Year	Cod	Haddock	Redfish	Flatfish	Pollock	Hake	Others	Groundfish
1970	4.30	3.83	13.00	3.83	9.21	10.41	2.64	5.47
1971	3.83	1.94	11.72	3.43	5.60	6.48	1.25	4.71
1972	4.21	1.51	12.29	3.08	1.70	4.71	2.15	4.86
1973	3.30	0.90	11.65	2.81	3.01	4.47	1.97	4.76
1974	3.01	0.80	7.50	4.04	1.88	3.66	4.26	3.68
1975	3.93	1.01	7.87	5.29	1.94	3.40	0.92	4.45
1976	2.21	0.37	8.81	4.00	1.01	3.43	1.92	3.30
1977	2.85	0.33	9.23	3.67	1.06	4.21	2.56	3.29
1978	2.43	0.82	6.03	3.23	0.37	5.17	1.26	2.65
1979	3.07	0.64	5.63	3.64	3.49	7.16	1.51	3.23
1980	2.60	0.79	2.43	2.74	6.76	7.33	2.00	2.66
1981	2.90	0.36	4.64	1.98	3.63	8.07	0.89	2.70
1982	2.83	0.54	4.62	1.96	5.39	9.20	0.52	2.77
1983	3.42	0.30	3.48	1.83	2.47	6.41	0.76	2.91
1984	2.16	0.30	3.72	1.70	1.95	7.92	0.19	2.06
1985	2.70	0.50	4.13	2.80	2.51	5.33	0.73	2.60
1986	2.89	0.48	3.91	2.02	4.89	3.39	0.65	2.66
1987	2.43	0.64	5.48	2.83	6.51	2.07	0.58	2.70

Year	Herring	Mackerel	Tuna	Alewife	Eel	Salmon	Smelt	Others	Pelagics
1970	33.74	14.92	95.49	50.00	24.03	18.63	59.52	0.36	29.77
1971	28.00	12.20	99.66	51.68	26.31	10.95	50.97	12.06	31.05
1972	41.96	9.40	98.34	32.56	27.45	1.08	50.14	7.94	41.17
1973	33.65	11.45	92.94	37.20	27.66	0.72	38.90	4.69	35.63
1974	33.09	12.58	89.98	24.24	22.22	0.36	40.18	5.49	35.67
1975	32.88	8.67	94.64	18.34	11.46	0.28	43.74	9.01	40.69
1976	31.26	5.28	85.71	18.91	13.93	1.08	55.41	4.63	33.08
1977	37.00	5.07	80.82	26.34	12.90	1.80	58.26	4.23	34.74
1978	40.64	6.21	75.33	27.54	4.24	6.44	51.34	1.01	32.80
1979	37.28	10.77	68.92	39.25	10.59	2.61	54.93	1.39	27.92
1980	23.41	15.17	15.64	53.63	9.93	3.96	67.73	2.64	18.94
1981	26.04	10.30	40.59	43.49	14.80	7.39	72.82	1.15	19.36
1982	27.48	13.68	5.92	33.45	23.65	9.13	80.20	1.16	19.80
1983	32.93	10.81	3.41	47.03	17.07	9.84	60.50	0.71	20.82
1984	32.94	7.24	4.90	56.83	14.75	2.65	65.17	1.07	18.30
1985	36.83	13.14	8.63	57.27	25.90	0.00	73.54	2.75	25.80
1986	40.06	13.67	0.29	40.60	22.91	0.00	71.21	0.89	22.13
1987	32.74	9.84	0.10	45.67	21.40	0.00	80.44	1.17	22.89

Table 5 (continued)

Year	Clam	Oyster	Scallop	Lobster	Shrimp	Crab	Others	Molluscs & Crustaceans	Total
1970	45.76	15.81	5.34	15.98	31.57	67.76	25.61	15.28	13.76
1971	47.40	24.18	5.09	14.36	26.13	67.63	9.63	14.20	12.35
1972	58.36	40.00	3.66	14.24	34.39	73.42	39.34	13.86	13.77
1973	54.82	30.21	2.70	14.01	17.32	64.10	21.95	14.99	12.97
1974	37.00	44.12	1.42	14.85	23.33	56.07	18.40	14.31	12.87
1975	27.58	45.27	1.09	15.36	13.01	64.35	7.64	12.59	13.48
1976	42.81	23.95	1.53	14.92	19.86	62.59	4.19	12.21	11.20
1977	31.41	24.64	0.80	17.08	13.82	56.77	0.77	12.86	11.96
1978	27.39	26.35	1.30	19.68	18.61	39.62	0.19	12.82	12.08
1979	32.72	30.32	1.29	18.50	16.60	40.78	0.96	12.47	10.71
1980	25.17	23.41	3.28	18.18	26.63	35.91	7.58	14.98	9.63
1981	29.30	18.70	7.08	17.26	21.03	38.80	3.54	15.35	9.74
1982	37.69	29.78	5.39	19.83	17.90	44.57	5.88	20.32	11.49
1983	33.04	35.11	8.96	16.69	13.75	47.29	22.30	20.88	12.83
1984	45.40	25.00	12.09	16.75	9.95	47.78	11.43	21.51	12.62
1985	52.87	42.23	9.36	16.70	11.49	37.11	9.60	18.85	12.34
86	56.34	23.90	6.90	14.13	10.26	34.78	11.36	16.87	11.32
7	27.75	27.20	5.10	14.98	11.87	30.35	29.09	15.78	10.37

Table 6
Landed Quantities by Species, Atlantic, 1970-1987
(metric tonnes)

Year	Cod	Haddock	Redfish	Flatfish	Pollock	Hake	Others	Groundfish
1970	218,982	22,442	108,512	148,966	9,074	7,698	9,853	525 527
1971	203,731	24,312	112,774	139,965	10,029	12,490	12,893	516 194
1972	219,146	17,206	109,917	128,452	18,283	15,522	12,933	521 459
1973	176,636	18,210	158,442	131,477	27,226	15,610	12,325	539 926
1974	156,806	14,800	87,693	107,140	25,188	13,700	12,436	417 763
1975	145,917	19,447	102,916	102,674	26,648	12,498	10,792	420 892
1976	193,550	19,326	89,654	123,210	23,238	10,577	10,111	469 666
1977	237,622	26,832	66,594	135,487	25,948	11,635	11,237	515 355
1978	296,859	43,034	77,065	142,587	27,534	11,179	13,794	612 052
1979	377,986	34,599	80,627	152,505	31,227	12,984	12,626	702 554
1980	422,092	54,262	48,982	146,622	36,751	18,269	12,806	739 784
1981	439,649	57,024	72,066	135,184	40,618	19,554	15,471	779 566
1982	517,352	46,403	66,023	119,815	38,576	16,881	15,277	820 327
1983	509,052	39,777	58,253	99,672	33,843	13,132	12,402	766 131
1984	474,925	32,654	65,110	104,890	35,217	13,993	8,256	735 045
1985	480,465	37,094	71,388	110,749	44,832	15,149	8,406	768 083
1986	480,502	44,722	82,696	111,027	49,704	16,894	9,178	794 723
1987	455,287	27,508	80,187	120,642	49,511	19,763	10,511	763 409

Year	Herring	Mackerel	Tuna	Alewife	Eel	Salmon	Smelt	Others	Pelagics
1970	478,939	15,700	3,157	3,277	867	2,093	1,809	8,411	513,371
1971	419,277	14,941	3,094	4,663	1,056	1,831	1,382	3,590	449,379
1972	304,045	16,143	4,950	3,761	847	1,525	1,232	5,222	337,420
1973	226,312	21,613	7,943	5,943	648	2,178	1,517	8,059	273,623
1974	225,583	16,636	7,892	5,687	557	2,221	1,900	18,195	277,698
1975	241,914	13,552	10,628	4,525	641	2,218	1,857	6,298	280,703
1976	225,461	15,755	7,036	5,488	527	2,196	2,151	13,386	270,776
1977	228,993	22,511	6,327	7,698	658	2,134	1,941	17,780	287,028
1978	246,132	25,432	4,081	7,626	651	1,400	2,226	27,159	313,408
1979	187,568	30,245	2,685	8,972	660	1,084	2,546	30,463	262,604
1980	176,915	22,136	375	9,738	842	2,391	2,291	28,617	241,941
1981	161,442	19,296	615	5,601	886	2,154	2,142	33,091	224,012
1982	147,250	16,378	298	4,585	619	1,536	2,434	35,557	207,150
1983	142,454	19,792	417	3,239	527	1,219	1,063	31,717	200,292
1984	130,293	17,331	249	4,016	623	894	1,016	44,895	199,228
1985	193,401	29,861	129	8,094	783	958	886	37,216	271,369
1986	186,730	28,469	88	5,012	875	1,320	2,421	70,361	293,782
1987	246,844	26,531	223	8,743	790	1,575	1,438	32,744	318,377

Table 6 (continued)

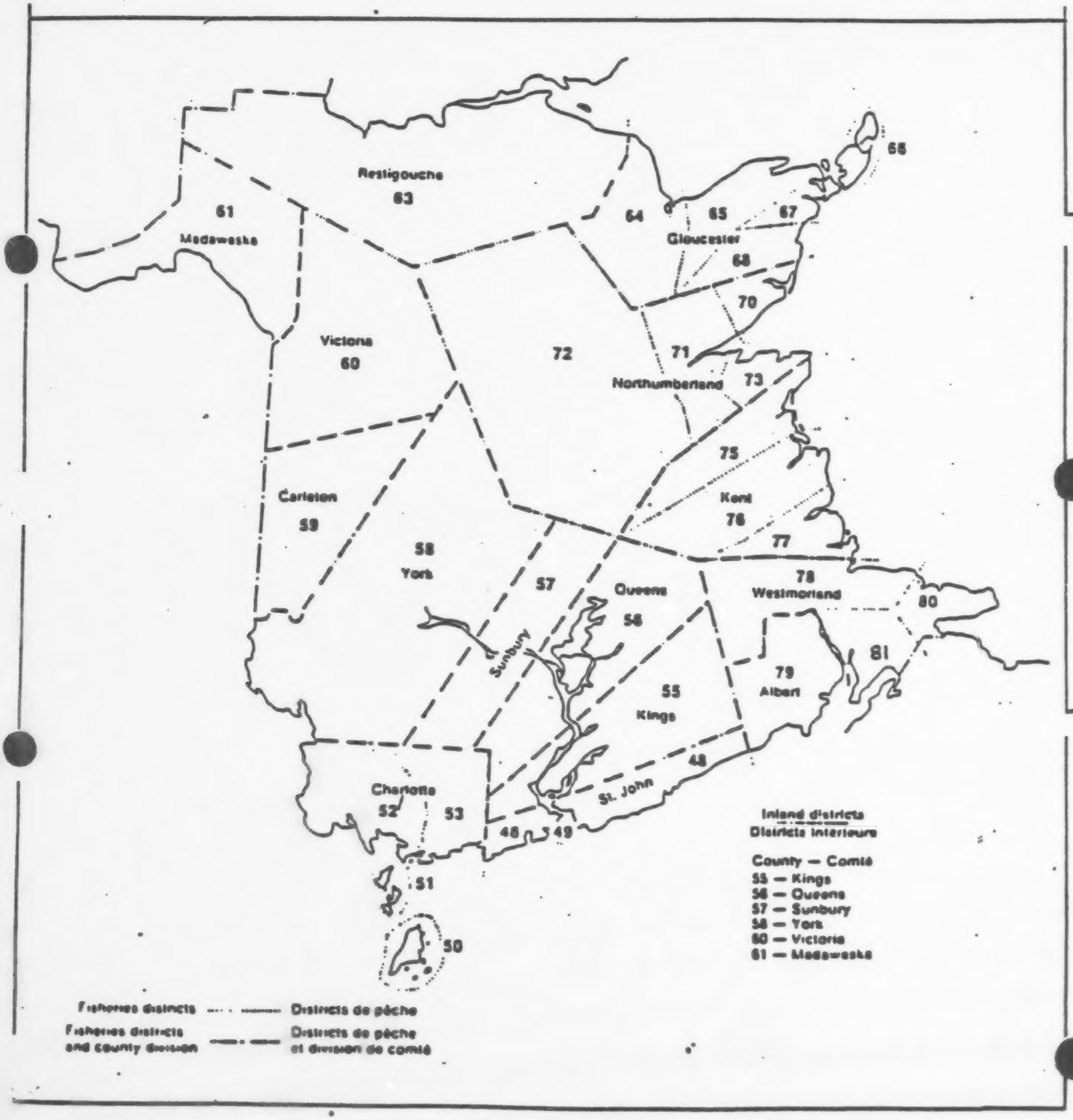
Year	Clam	Oyster	Scallop	Lobster	Shrimp	Crab	Others	Molluscs & Crustaceans	Total
1970	4,273	1,233	5,889	16,594	2,022	7,668	573	38,252	1,077,15
1971	5,749	1,232	5,067	17,310	1,779	6,781	2,212	40,130	1,005,70
1972	3,765	900	43,723	15,054	1,384	7,020	509	72,355	931,23
1973	3,913	1,018	40,476	16,146	2,170	9,854	1,352	74,929	888,47
1974	2,561	1,247	52,851	14,252	3,518	10,458	612	85,499	780,96
1975	2,447	1,628	66,651	17,489	4,712	7,040	3,783	103,750	805,34
1976	2,395	1,113	93,400	16,082	5,017	10,738	11,705	140,450	880,89
1977	3,372	993	116,849	17,833	8,092	14,219	39,333	200,691	1,003,07
1978	3,889	1,483	109,404	19,179	10,058	21,023	62,735	227,771	1,153,23
1979	3,695	1,482	89,488	21,576	13,002	30,139	113,162	272,544	1,237,70
1980	4,254	1,514	70,472	20,088	13,317	28,725	35,993	174,363	1,156,08
1981	4,722	1,403	89,896	21,697	16,258	37,854	19,149	190,979	1,194,55
1982	6,229	1,321	65,100	22,804	12,822	48,258	13,621	170,155	1,197,63
1983	4,939	1,487	51,289	27,655	14,082	41,514	1,050	142,016	1,108,43
1984	6,624	2,249	36,474	28,701	11,727	42,710	2,447	130,932	1,065,20
1985	7,708	2,070	47,209	32,639	13,015	44,245	1,597	148,483	1,187,93
1986	7,267	2,316	56,992	37,997	14,665	42,838	3,427	165,502	1,254,00
1987	15,976	1,889	73,761	39,186	23,299	28,565	3,466	186,142	1,267,92

Table 7
Groundfish TAC's in the 200 Miles Limit Zone, 1979 to 1987
Historical TAC's (thousands of tonnes)

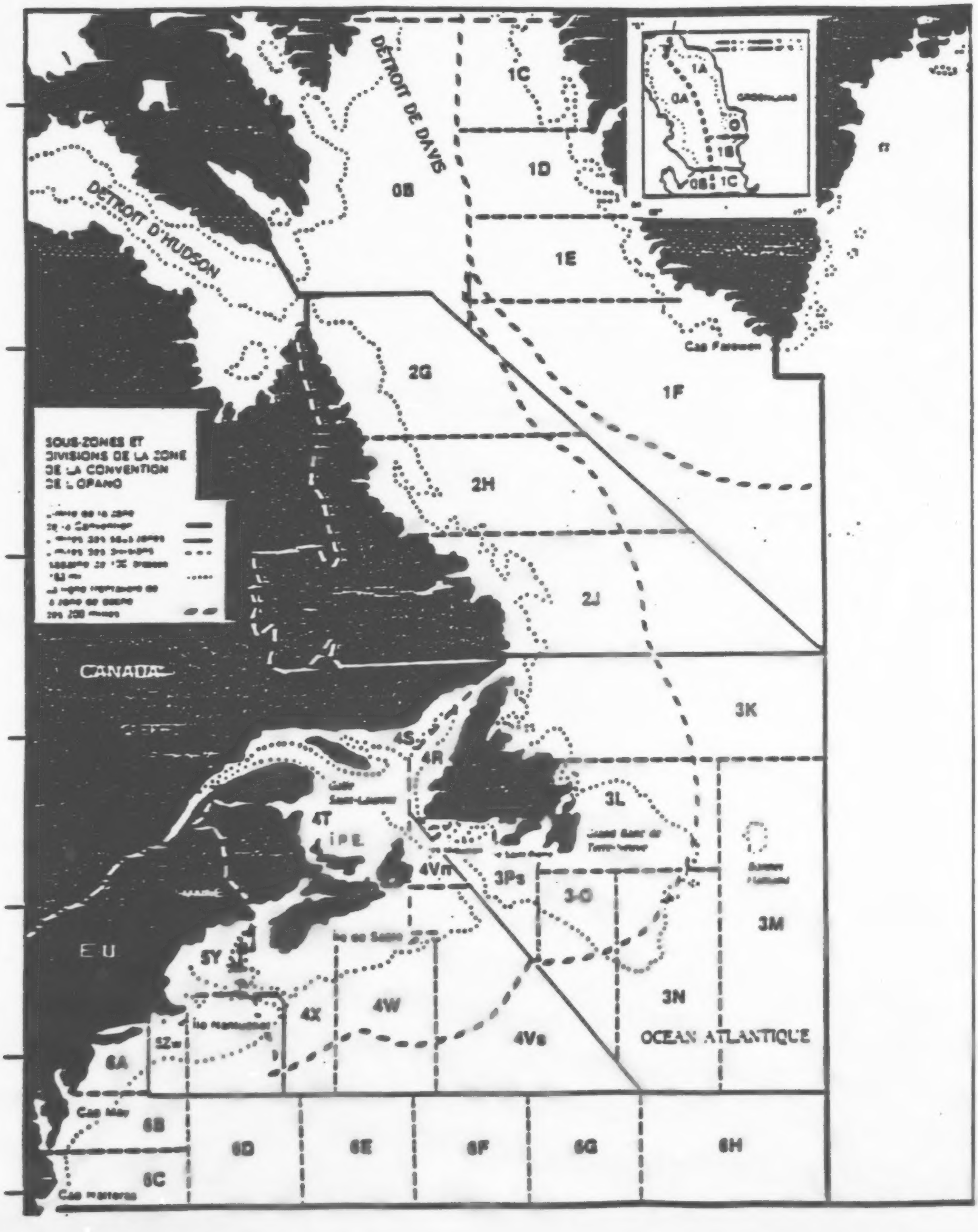
Species	1979	1980	1981	1982	1983	1984	1985	1986	1987
Cod	361,5	428	454	540,5	600	603	624	592,1	542,5
Flatfish	99	100	111	117	113	111	103	109	102
Redfish	115	144	148	156	159	178	178,6	183,6	178
Haddock	28	43	51	55	51	47	30	32	19
Halibut	30	35	67,5	75	92,5	92,5	92,5	117,5	120
Pollock[1]	30	40	54	55	45	53	42,4	40	44,5
Silver Hake	70	90	80	80	80	100	100	100	100
Grenadine	35	30	31	31	15	15	15	15	15
Stockfish	—	—	—	12	12	12	12	12	9,4
Argentine	20	20	20	—	—	—	10	10	10
Others	57	67	107	54,5	144,5	64,5	72,5	30,5	27,2
Grand total	845,5	997	1 072,5	1 176	1 232	1 276	1 280	1 241 7	1 167,6

efers to 4VWX + 5 stock; zone 5 is not included in the 200 miles zone limit.

Map 1
New Brunswick Sea and Inland Fisheries Districts


Restigouche
63
61
Madawaska
Victoria
60
72
64
65
67
66
Gloucester
68
70
71
Northumberland
73
75
Kent
76
77
Carleton
59
58
York
57
Sunbury
Queens
56
78
Westmorland
80
81
79
Albert
55
Kings
48
St. John
Charlotte
52
53
46
49
51
50
Inland districts
Districts intérieurs
County — Comté
55 — Kings
56 — Queens
57 — Sunbury
58 — York
60 — Victoria
61 — Madawaska
Fisheries districts
Districts de pêche
Fisheries districts and county division
Districts de pêche et division de comté

Map 2
Canadian 200 Mile Fishing Zone With the North Atlantic Fisheries (NAFO) Subdivisions


DÉTROIT DE DAVIS
DÉTROIT D'HUDSON
0B
1C
1D
1E
1F
1A
0A
GROENLAND
1B
Cap Farewell
SOUS-ZONES ET DIVISIONS DE LA ZONE DE LA CONVENTION DE L'OPANO
2G
2H
2J
CANADA
3K
4S
4R
Golfe Saint-Laurent
4T
I.P.E.
3L
Grand Banc de Terre-Neuve
4Vn
3Ps
3-O
Bonnet Flamand
3M
Île de Sable
5Y
E.U.
4X
4W
4Vs
3N
OCEAN ATLANTIQUE
5Ze
6A
Cap May
6B
6C
Cap Hatteras
6D
6E
6F
6G
6H